

THE IRON AGE

New York, Thursday, July 26, 1906.

Commonwealth Electric Company's New Station.

The First Steam Turbine Electric Generating Station in Chicago.

Central station progress is an important part in the activity of a growing city, such as Chicago. Every year adds 70,000 to the population, and the area of the city is now more than 191 square miles, almost covering Cook County. To keep pace with the demands for electric current the two great electric service companies that together cover the city, the Chicago Edison Company and the Commonwealth Electric Company, have had to unify into a homogeneous system a number of variously equipped generating stations. Gradually most of them have been changed over to converting substations, leaving only three or four with steam generating machinery,

installation of Curtis steam turbo-generators. It being the first great power house in the world to be equipped with steam turbines. The plant now consists of a power house and switch house, the former being about one-third completed, while one-half of the latter has been finished. Another third of the power house and an additional quarter of the switch house are under construction. These buildings are located on a site covering approximately 14 acres, and an additional 9 acres just opposite, on the south side of the river, is used for coal storage, where from 20,000 to 60,000 tons of coal are kept in reserve. A private tunnel under the river con-

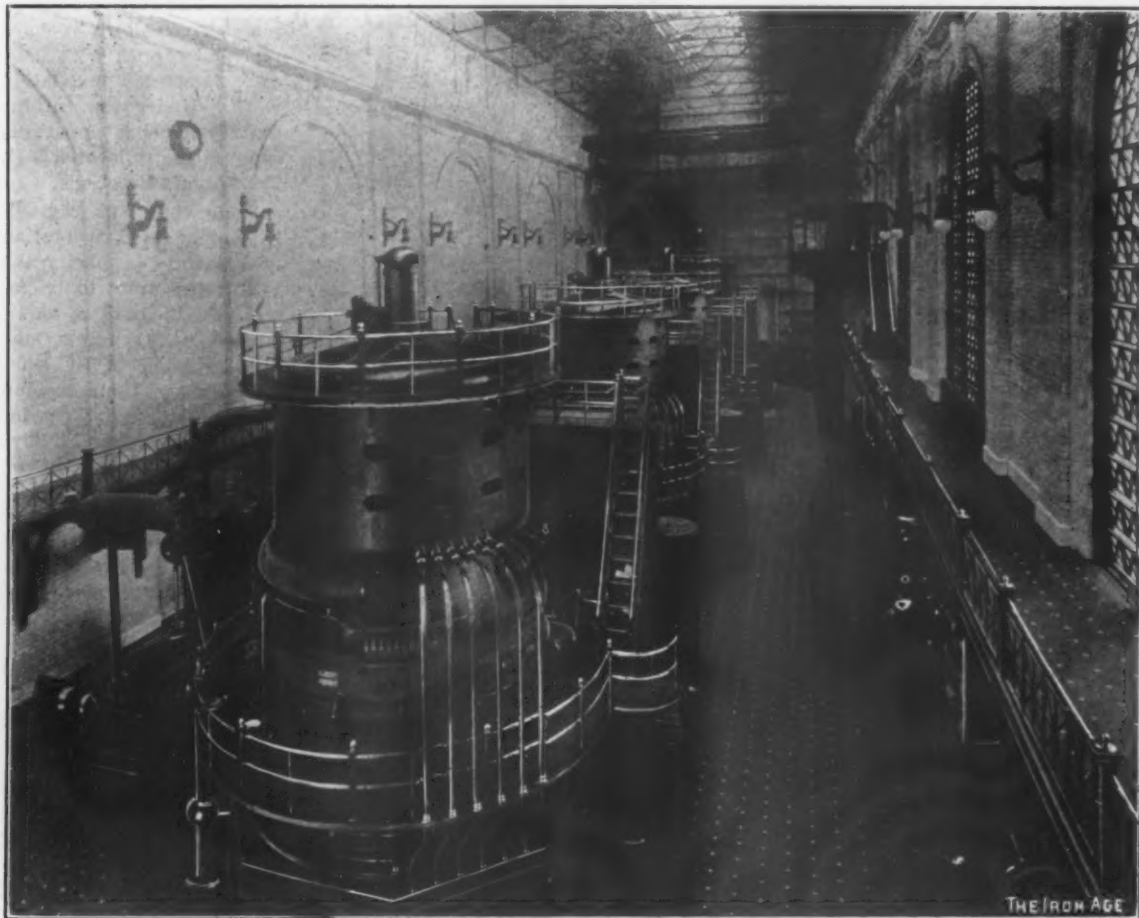


Fig. 1.—View in the Turbine Room of the Fisk Street Station of the Commonwealth Electric Company, Chicago. The No. 1 Unit in the Foreground.

while the system is operated from two or three principal generating stations, a plan dictated by the economy of large, modern generating units, the rapidly growing and uneven distribution of current demand and many other considerations.

The two companies operate separate systems, which are, however, interconnected, most of the current being generated at the new station of the Commonwealth Electric Company at Fisk street and the river, and the remainder principally in the now outgrown station of the Chicago Edison Company at Harrison street and the river, the latter having a total capacity of about 15,000 kw.

The former is a famous example of central station construction in many ways, but chiefly because of its

connects the two parts of the property. The tracks of the Chicago & Alton and the Chicago, Burlington & Quincy railroads enter the grounds, and a slip from the river runs back on either side of the north plot, providing ample coal transportation facilities.

The architectural style of the buildings is French, the construction being of steel, covered with red pressed brick ornamented with heavy cut Bedford stone. Every detail has been carefully studied by the architects, Shepley, Rutan & Coolidge of Boston and Chicago, and the buildings already stand out as a grateful relief among less pleasing surroundings. Lighting and ventilating in the power house are assisted by the ingenious arrangement of coal bunkers, &c., which permitted the construction of very large windows or louvers 25 ft. wide and

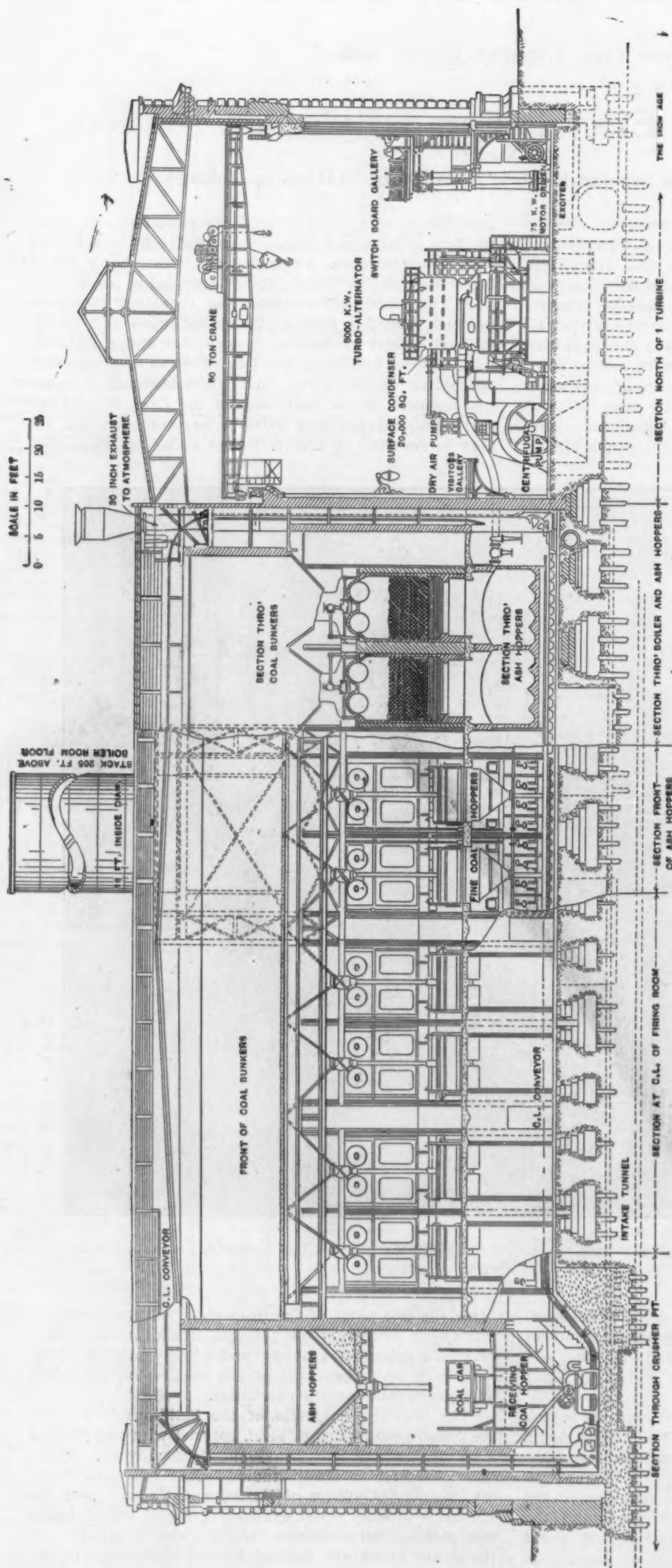


Fig. 2.—Cross Section of the Fisk Street Power Station, Showing the Unit Principle in the Relation of Boilers to Turbines.

32 ft. high in the walls, and large ventilating skylights over the inside sections. The several metal framed window sections in each of these louvers and the skylights are operated by air supplied at 90 pounds pressure by a steam driven compressor located in the basement. In the turbine room the walls are lined with white enameled glazed brick with terra cotta trimmings, and the floor is laid with terra cotta 2-in. hexagonal tile. The arc lamps for lighting this part of the station are of ornamental design, supported midway between the visitors' gallery and the tracks of the 50 and 100 ton traveling cranes by massive iron brackets, with Bauer-Barff finish. The station rests on piles driven down to hard pan and capped with massive concrete foundation work. Under the turbine and condensing apparatus these piles are located 3 ft. apart in all directions.

While the plans originally contemplated a station of 70,000 kw. capacity the 14 turbine units to be installed will have a maximum capacity for a sustained period of at least 156,000 kw. Four turbine units have already been installed, Nos. 1, 2 and 3 having a rated capacity of 5000 kw. each and No. 4 8000 kw., and work is being pushed on sections for units 5, 6, 7 and 8 of 8000 kw. each. The first four machines, shown in Fig. 1, have demonstrated that generators of this type can safely be made to carry temporary overloads of 100 per cent.; in fact, unit No. 4, rated at 8000 kw., frequently carries over 9000 kw., and the machines to be installed are all designed for a sustained maximum of 12,000 kw. each.

The unit system of construction has been worked into every detail of this station, with a view to the isolation of possible station troubles. Two batteries, each containing eight double drum Babcock & Wilcox boilers, constitute a section of the boiler room corresponding to two turbine units, being completely divided from the turbine room by a heavy fire wall and massive iron doors. These sections are laid out at right angles to the turbine room axis, as shown in Fig. 2, which is a cross

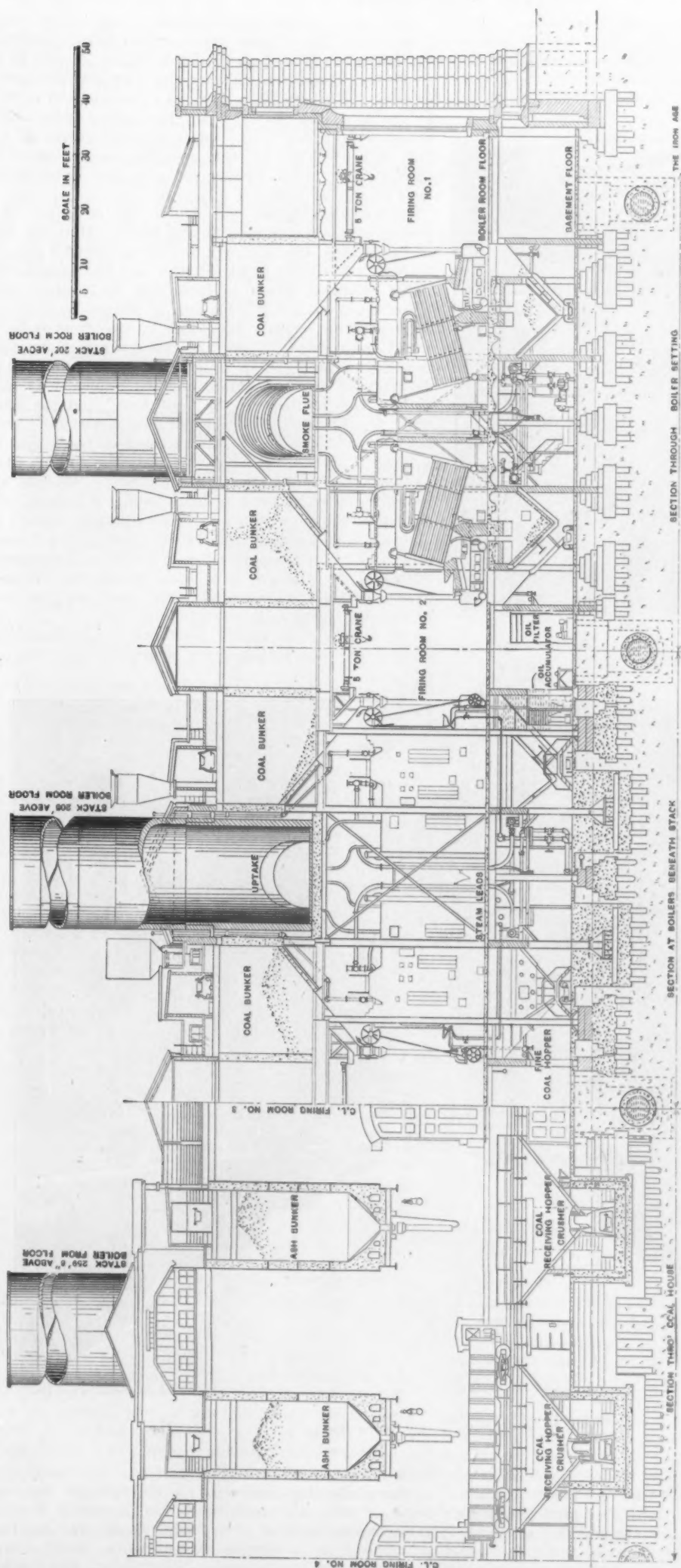


Fig. 3.—Longitudinal Sections Through the Boiler Room. Taken on Different Planes.

section through the boiler and turbine rooms. Fig. 3 shows the longitudinal sections on different planes through the boiler room. The boilers are of 550 hp. each, and have an unusual height of tubes over the fire, thus practically embodying the function of a fuel economizer, considering the type of superheater employed. The simpler construction was adopted because of its lesser first cost and maintenance expense, considerations which in this case practically offset the virtues of the usual fuel economizer. There are 252 4-in. tubes 18 ft. long in each boiler, giving 5000 sq. ft. of water heating surface. The steam passes down from the drums to the superheater, which is located below the former in the path of the hottest of the flue gases, just before they enter the uptakes. This superheater has 900 sq. ft. of surface. The boiler pressure is 180 pounds, and 150 to 200 degrees of superheat is secured.

The station is coaled from cars run into the train shed and dumped into receiving hoppers. In each section there are two large motor driven coal crushers located below the receiving hoppers, and two McCaslin conveyors encircle the coal bunkers above the boilers, the ashpits under the chain grates and the coal crusher. The capacity of the coal bunkers over each battery of boilers is 1200 tons, which is sufficient for several days' average run of its turbine. The conveyors are endless chains of overlapping iron buckets, each with a capacity of 100 pounds of crushed coal, and travel at the rate of 50 ft. per minute, being driven by a 15 hp. motor, so that the total capacity is 75 tons of coal per hour. A detail of the upper run of the conveyor is given in Fig. 4. The lower end of each coal bunker is flexibly connected to an iron chute, through which the coal is let down to the stoker hopper by a hand controlled cut-off, as

may be seen in the view in one of the firing rooms, Fig. 5.

The grates are of the moving chain type, traveling 5 to 7 in. per minute by the usual automatic stoker arrangement. The coal burned is chiefly Illinois screenings, but combustion is so perfect that practically no



Fig. 4.—A Detail of the Upper Run of the Coal and Ash Conveyor.

For each present boiler section of the station there is one stack 18 ft. inside diameter and 225 ft. high, but for the two sections now building the stacks will be 50 ft. higher. The boiler up-takes and flues are constructed of steel, lined with 13-in. firebrick, which is also carried up inside of the stacks to the top in successive thicknesses of 9, 6 and 4 in. These immense stacks do not rest on foundations of their own, but are supported by special heavy steel girders spanning the boiler room, thus greatly economizing in space.

Immediately below each double row of boilers is a long space known as the "header room." Here the 6-in. steam headers, the auxiliary boiler feed headers and the blow-off and service pipes for each unit are located, galleries affording access to each joint and valve. One large steam main for each row of boilers supplies the corresponding turbine, increasing in size from 6 to 14 in. at the turbine. There are two separate boiler feed headers for each row of boilers, separately connected to each of the two feed pumps and independently to each boiler. One of these is the "hot feed" and the other the "cold or auxiliary" supply. The latter has "pressure wash" connections, so that one feed pump may be utilized in cleaning the boilers. Near the turbine room end of each section the two main steam headers are cross connected by an 8-in. pipe, so that a turbine may be run either from its own or the adjoining battery of boilers. The hot feed headers are similarly connected; otherwise all of the piping for each unit is independent. All pipes are wrought iron, with welded steel flanges, smooth finished and ground with emery on iron face plates and joined without gaskets.

In designing the station itself and the auxiliary machinery for the turbines many difficulties were success-



Fig. 5.—One of the Double Firing Rooms.

smoke is produced. The ashes fall into ash hoppers below the grates, from which they are conveyed to a large ash bunker over the train shed and are then dumped into empty cars. Means are provided below the front of the grates for catching and saving the fine coal which inevitably leaks through.

fully overcome by the engineers. The very necessities of the condensing apparatus for the turbines were the cause of some uncertainties, for no precedents existed. However, the need of a very high vacuum decided that the type must be surface condensing, as the jet type would lower the vacuum by permitting the introduction

of air mixed with the water. Further, no oil being used to lubricate the steam chambers of the turbines the water of condensation could be returned immediately to the boilers. The cooling surface of each condenser is 20,000 sq. ft., 4773 1-in. seamless brass tubes 16 ft. long being used. The condensers have three superposed sections of passes, the water supply for each pass being introduced at the top and flowing out at the bottom. The steam enters at the bottom, condensing as it circulates upward.

Cold water to the condenser is supplied from the east slip, through intakes supplied with screens, one for each two boiler sections. It is conducted to the cold well through a 4½-ft. concrete tunnel and discharged into an 8-ft. tunnel running under the turbine foundations, which will take care of five condenser units and discharges into the west slip. For each condenser there is a two-stage dry vacuum pump connected to a small vertical drum at the top of the condenser for removing the air, a wet vacuum pump for removing the condensa-

able to carry about 65 per cent. of its ordinary load under those conditions.

The Emmet-Curtis type of steam turbine, manufactured by the General Electric Company, Schenectady, N. Y., is now too familiar to require more than a general description here. The first of these Fisk street turbines was the first of any make of great size, and when started up in the station it had never been tested under load, consequently it was run for a month with load supplied by a large water rheostat, consisting of plates suspended in the slip on the west side of the property. Having been thoroughly proved and tested the turbine was put in service on the company's mains October 2, 1903, 14 months after ground was broken for the station.

The first three turbines stand about 30 ft. high, rising 26 ft. above their foundations, and their greatest diameter is 16½ ft. They are two-stage machines, the first stage abstracting the energy in the steam due to its pressure above the atmosphere and the second stage the re-

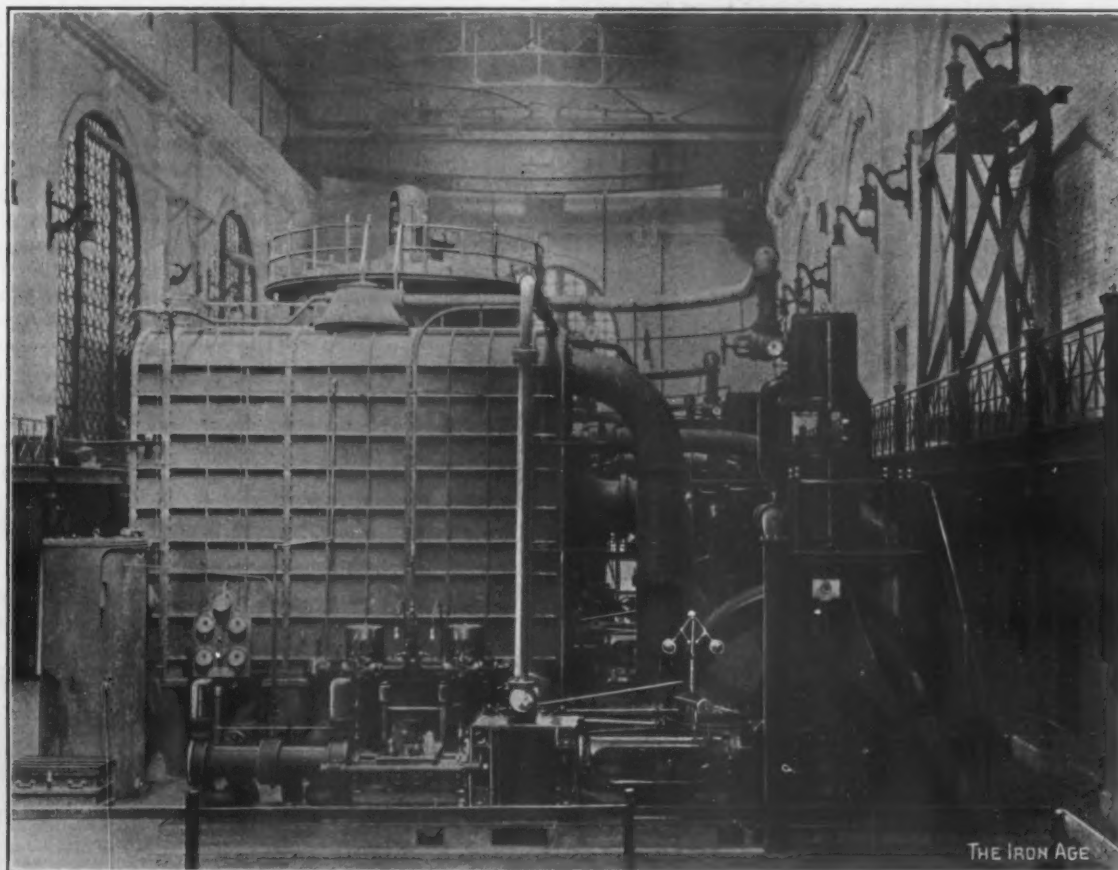


Fig. 6.—The Condenser and Auxiliary Machinery for Unit No. 4.

tion, which passes it into a hot well supplying one of the boiler feed pumps, and a centrifugal pump, with 24-in. discharge, designed to supply 140,000 cu. ft. per hour at 75 rev. per min. for circulating the cold water. These three pumps for each condenser are operated by a 145-hp. Corliss vertical-horizontal engine placed opposite the condenser, the circulating pump being mounted on the shaft and the other pumps connected separably to the piston tail pieces, as shown in Fig. 6.

For turbines Nos. 5, 6, 7 and 8, to be installed, the condensers will be of the subbase type, which closely resembles the above described type laid on its side. The main casting supports the turbine, and the foot-step bearing is an integral part of the condenser construction, avoiding a vacuum connection at that point. The vacuum in the condensers, even when the turbines are running under heavy overloads, is never less than 28 in., although the temperature of the cooling water frequently rises to 75 degrees F. in summer time.

A 30-in. exhaust pipe from each turbine runs up to the roof inside the boiler room wall. In case the vacuum is lost an automatic valve opens in this exhaust connection and the turbine runs noncondensing, being

mainder, depending on the condenser vacuum. The steam enters through three sets of expanding nozzles and gains tremendous velocity by the time it strikes against the blades. So low, however, is the velocity of the exhaust that the condensers for units Nos. 1, 2, 3 and 4 have been placed very close to the turbines, and the exhaust steam ports are of an unusual size.

The governor is attached to the top of the turbine shaft, above the generator, and maintains the speed constant within 2 per cent. at 500 rev. per min. An emergency centrifugal trip on the shaft, between the turbine and the generator, releases a trigger controlling a valve in the main steam header and shuts off the steam to the turbine if the speed increases to 550 rev. per min. In the first three turbine units each of the three steam chests contain 12 nozzle valves, and each of the two turbine wheels have four sets of blades. These wheels are 12½ ft. in diameter. The steam is directed back on each wheel three times in its course through each stage, thus reducing the peripheral speed, which would otherwise have to be approximately 1300 feet per second. The blades have a slight clearance, which requires occasional adjusting, and is accomplished by a ratchet device hand

operated from the attendant's station on the machine. This in turn actuates a worm gear, which turns a great nut on the stationary part of the bearing. Each turbine is provided with a magnifying indicator, which shows the exact relative position of the moving and stationary blades.

Turbine No. 4, shown in Fig. 7, is a five-stage machine, there being but two rows of blades on each of the five wheels, and Nos. 5, 6, 7 and 8 are of the same type.

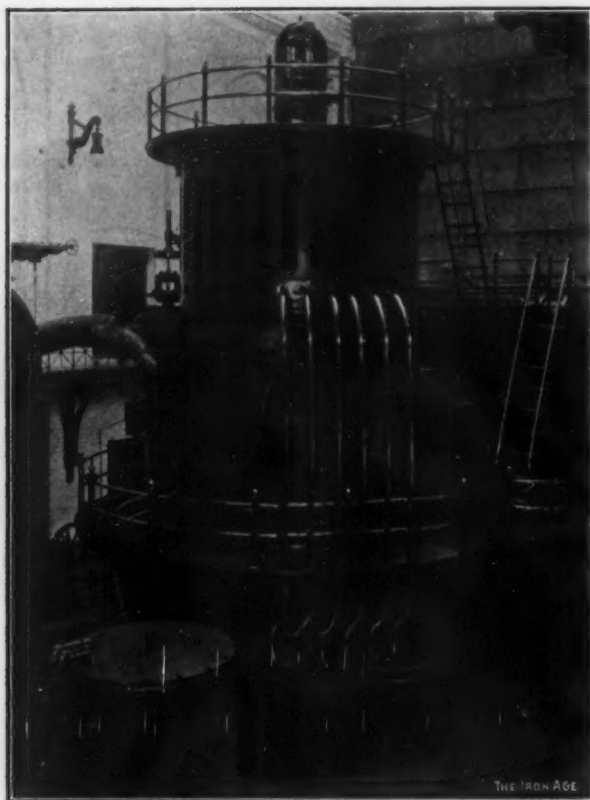


Fig. 7.—Turbo-Generator No. 4. The First of the Five-Stage Machines Installed.

No. 4 also differs from the others in that the steam enters through two steam chests instead of three, in each of which are 15 expanding nozzles. There is also provision for better ventilating the generator, as it is designed for greater capacity.

Each turbine has an independent motor-driven triplex high pressure oil pump, with a capacity of 6 gal. per minute. These were originally depended upon for the oil circulation, but are now held in reserve, the oil system being consolidated for three turbines, and a large steam engine in the oil return and filtering room under the boilers maintains the pressure, which is in the neighborhood of 1200 pounds per square inch for the foot-step bearings. A branch of the oil piping, provided with a reducing valve, supplies oil at a much lower pressure for the two lateral bearings of the turbine shaft and for the governor. The auxiliary machinery has sight feed oil cups, for which, as well as for the cylinder oil system, there is a constant gravity feed from an oil tank located on the boiler room wall above the level of the machines. This is kept filled by two small screw pumps. All the oil is filtered every time it makes the return circuit from the oil drains. For emergency purposes there is an oil accumulator located in the boiler room and connected with the turbine oil system, which is built much on the general plan of the hydraulic accumulators used in connection with elevator systems. Should the pressure on the system fall below a certain point a retaining trigger in the accumulator is automatically tripped, permitting the gravity compressor to continue the high pressure oil feed until the machine can be stopped or the regular oil system be put in operation again.

The turbines generate three-phase alternating current at 9000 volts pressure and 25 cycles. The generators

are mounted on the vertical shafts immediately above the bearings, being separated from the latter by a heavy cast iron diaphragm thickly covered with asbestos cement, protected by an outer covering of sheet steel. The heavy iron casing of the armature is pierced with numerous large ports, through which the rapidly revolving field draws air, producing excellent ventilation. The generators are very much smaller for their capacities than would be expected, owing to their relatively high speed, the diameter of the revolving fields being under 7 ft. 4 in. There are six pole pieces of laminated construction, which are dovetailed into the laminated sheets which form the field core, these being strongly keyed into position, and the whole heavily banded with steel.

The armature has a distributed winding of formed coils similar to that of an engine driven machine. The terminals are located on the west side, toward the switchhouse, and the cables connected thereto lead down to a junction box in the base of the turbine through six brass pipes. Three of these cables are connected to the three-phase legs of the armature; the fourth is a neutral to the ground, and the other two contain the exciter and governor control circuits. From the junction the main cables run in vitrified conduit to the switchhouse.

The exciting current for the generators is taken from a main and an independent auxiliary exciter bus in the "cable basement," under the turbines. Near each turbine is a 50-kw. motor generator, providing 115-volt direct current for exciting and control. These are operated by current from the turbo-generators, through special oil switches and stationary transformers located in the switchhouse and controlled from the turbine room operating gallery. Each exciter set has a controlling panel near by, and also remote control from the gallery. Connected to the same exciter busses are a steam driven 75-kw. auxiliary exciter and a 70-cell 800 ampere-hour storage battery, the latter being located over No. 1 firing room.

The switchhouse is another example of the "unit idea." It was built to isolate the large amount of complicated high tension switching apparatus and to house the very large line, auxiliary and transfer busbars and the numerous oil switches in connection with them. In addition it provides a large amount of room on the second floor for the local offices of the company, and various accommodations for the employees, including a com-



Fig. 8.—The Six-Stage Centrifugal Fire Pump.

mon dining room. An elaborately equipped electric kitchen and 200-pound refrigerating plant adjoins the main dining room, and electrically cooked meals are served every day. Living rooms for the employees who may have to stay at the station several days at a time are provided on the same floor.

The generator leads enter in underground ducts, rising to the basement ceiling in recesses provided in the east wall and crossing over to the busbar chambers. All the busbars and connections are isolated on the unit

plan in separate fireproof compartments, and are insulated to withstand a pressure of 20,000 volts. On the first floor above are the oil switches. The energy from the generators passes through oil switches to the operator bus and from there is delivered to the transfer, auxiliary and line busses, the latter being equipped with sectional oil switches.

The main operating board for the station is located on the gallery above the visitors' gallery on the west wall of the turbine room. It carries switches for controlling all of the motor operated oil switches in the switch house and the most necessary indicating switches only. The other apparatus includes the instrument transformers, overload relays, intergrading watt meters, &c., all located in the switchhouse, thus greatly simplifying the main board. On the main board all the controlling apparatus for each unit and its lines is mounted on one 5-ft. panel. This includes an ammeter and watt meter on one leg of each of the four lines from the generator, a volt meter, power factor indicator and a frequency indicator, an ammeter for the field current and a volt meter and pressure switch for the exciter circuit. There is an operating table at each panel, with only the handles of the switches projecting through it, the openings being protected by shields mounted beneath them on the switch handles. Indicating dummy busbars and pilot lamps are provided at each panel, and there is a signal system whereby the attendant can communicate with the attendant in charge of the turbines. The switchboard gallery is inclosed with plate glass as a protection from the penetrating hum of the turbines.

The station buildings are entirely fireproof, being constructed of nonflammable materials, and are also completely isolated from their surroundings, standing as they do in about the center of 14 acres of otherwise vacant land which is four-fifths surrounded by water, so danger from fire is most remote. A 6-in. high pressure main is laid in the ground surrounding the buildings and to this are attached a number of fire hydrants and standpipes running to the roofs. This main also runs to the river, where connections for the city fireboats are provided. At various convenient points about the building 200-ft. lengths of high pressure firehose are located.

In a special fireproof room in the third section of the boiler house has been installed a six-stage centrifugal motor driven pump, shown in Fig. 8, having a capacity of 750 gal. per minute at 250 pounds pressure in the main. The pressure rises to 250 pounds when the speed is raised to 800 rev. per min. The station force is thoroughly drilled for fire fighting.

There is a duplicate electric service system for the power house and switchhouse, supplied from the service bus in the new Twenty-second street substation of the company, recently built on the north end of the Fisk street property. Over 1200 incandescent and 50 arc lamps are required to light the present buildings and 300 hp. in motors is used for various purposes, exclusive of the fire pump motor, which is 220 hp., and which has separate service.

Every attention has been paid to the most modern sanitary requirements in both buildings. Commodious shower and tub baths, with individual lockers, are also located on the second floor for the turbine room and office employees. In the power house, above the firing room of the first section, is located a comfortable furnished library and rest room for the boiler house employees who may be off duty, and similar baths are provided for them in an adjoining apartment.

All the engineering work connected with the equipment of the Fisk street station has been carried out under the direct supervision of the permanent engineering staff of the Commonwealth Electric Company and stands to-day as a monument to their enterprise and ability. The success of this great plant constitutes one of the more important recent episodes in the development of power manufacturing plants the world over and of electric central station activity in the West.

At Jamestown, N. Y., July 19, in the United States Court the case against the Association of Sewer Pipe Manufacturers was about to be presented to the Federal

Grand Jury when the attorney for the manufacturers stated that he would enter into an agreement that the association dissolve. This proposition was accepted by the district attorney, and is taken to mean that the so-called sewer pipe trust will go out of business as such.

The Gas Blowing Engine Plant for the Indiana Steel Company.

What will eventually develop into perhaps the largest gas power plant in the world has its inception in an important contract recently placed with the Westinghouse Machine Company, of East Pittsburgh, Pa., for 8 large gas driven blowing engines to be installed in the Indiana Steel Company's new plant at Gary, Ind. As it is the expressed intention of the United States Steel Corporation, which controls the Indiana Steel Company, to make this the foremost American steel center, the significance of simultaneous development of gas power is obvious.

The machines comprised in this initial order will be uniform in size and capacity. Each gas engine, as an electric unit, will have a rated capacity on blast furnace gas of nearly 3000 hp., corresponding to a rating of 4000 hp. on natural gas. The unit will be arranged in twin tandem fashion, each side consisting of two double acting gas cylinders and one blowing cylinder in the opposed or *vis a vis* arrangement. Power cylinders are 42 in., and the air cylinders 68 in. in diameter, with a common stroke of 54 in., the unit running at a maximum speed of 75 rev. per min. for blowing and 84 rev. per min. for electric work. The capacity of air delivery at this speed will be 33,000 cu. ft. of free air per minute at 18 pounds pressure, with a maximum pressure delivery of 30 pounds per square inch.

This type of engine will not only be used for blowing purposes but also for electrical generation. In all sizes a resemblance to the horizontal tandem heavy duty steam engine design is strong. The general design conforms quite closely to that of similar machinery ordered by the United States Steel Corporation for the Carnegie Steel Company's plant at Bessemer, near Pittsburgh. It also follows closely, but on a larger scale, the design of a number of smaller units already in operation in various parts of the country for power work; notably those at the plants of the Warren & Jamestown Street Railway Company, Warren, Pa.; Standard Steel Car Company, Butler, Pa.; Iola Portland Cement Company, Iola, Kan.; Carnegie Technical Schools, Pittsburgh, &c. Some of these smaller plants are operating on natural gas, but, with the exception of slightly different proportioning of air and gas passages and cylinder diameter, the general construction of the natural gas engine is practically identical with that intended for leaner gases, such as producer and blast furnace gases.

For several months a 350-hp. engine of this type has been in regular operation on blast furnace gas at the Edgar Thomson Works, Pittsburgh, generating electricity for motor driven foundry machinery. The engine was installed largely for experimental purposes and has given such excellent operating results that the success of the larger machines may be regarded as an assured fact. This engine is now completing a 30-day continuous load and duty test, operating 24 hr. per day and seven days per week during the period.

The Merchants' Association, of Danville, Ill., is endeavoring to enlist the attention of manufacturing industries in its city as an advantageous point for location. Danville is a division point on the main line of five railroad systems which bear direct connection with all the leading middle Western and Western centers, the roads deflecting to such points as Chicago, St. Louis, Kansas City, &c. Aside from transportation facilities, Danville enjoys the distinction of being the metropolis of the large Indiana and Illinois bituminous coal fields and therefore the center of an inexhaustible fuel supply, which is an important factor in manufacturing operations. Favorable rates are said to be given on pig iron, ore and similar materials which can be hauled in returning coal cars.

Free Alcohol Regulations.

WASHINGTON, D. C., July 23, 1906.—Manufacturers in all parts of the country, and especially the makers and users of internal combustion engines of various types, are addressing communications to the Commissioner of Internal Revenue in the hope of foreshadowing the general terms of the regulations now being prepared for the administration of the law recently passed by Congress granting free denatured alcohol for industrial purposes, which takes effect January 1, next. The regulations will not be made public until October 1, but certain features of the code have been practically determined. It is also possible to correct certain erroneous reports now current among manufacturers with regard to both production and consumption of denatured spirits.

Commissioner of Internal Revenue Yerkes, accompanied by Dr. Crampton, chief chemist of the Internal Revenue Bureau, is now in London for the purpose of studying the laws and regulations of the leading European countries which have adopted free alcohol policies. Until they return little progress will be made in preparing the regulations, but in a circular letter just issued by Acting Commission Williams, the promise is made that these will be ready for promulgation not later than October 1.

How the Trade Shall Be Regulated.

It is the present intention of the Internal Revenue Bureau to divide the consumers of denatured spirits into at least two classes: first, manufacturers who use alcohol denatured with a special agent suited to their product; and second, persons who employ spirits denatured with the standard agent to be adopted by the Internal Revenue Bureau, whether as a component material of manufacture or for heat, light and power. It was the original desire of the Commissioner of Internal Revenue that all manufacturers using specially denatured spirits should pay a small tax, but the Senate Finance Committee declined to accept this suggestion. It is understood, however, that the commissioner will incorporate in his regulations certain provisions, a draft of which was submitted to the Senate committee while the bill was pending. These provisions are in part as follows:

Specially Denatured Alcohol.

That any manufacturer of articles in which alcohol is used who is not a distiller and desires to use alcohol denatured with material specially suited to his line of manufacture may, after being duly qualified, be authorized to withdraw alcohol, tax free, for said purposes upon full compliance with all the requirements of this act and of the regulations issued pursuant thereto. Provided, that the word "manufacturer," as used in this act, shall be held to mean any person, firm or company having an established place of business and manufacturing, for wholesale only, any article included in the provision of this act.

That any manufacturer desiring to avail himself of these provisions shall file with the collector of internal revenue of his district a notice and application in duplicate, setting forth his name and residence, and, if a company or firm, the name and residence of each member thereof; the location and description of the premises and buildings where his business is conducted; the article or articles in the manufacture of which alcohol is to be used, and the authorized distiller or wholesale dealer from whom the alcohol will be obtained.

That each manufacturer filing the notice and application provided for shall execute a bond with surety, to be provided by the collector of internal revenue, in a penal sum of not less than double the amount of tax on the estimated quantity of alcohol specified in his notice.

The collector shall refuse to approve said notice and bond when in his judgment the situation of the manufacturer's premises is such as would enable him to defraud the United States, and in case of such refusal the manufacturer may appeal to the Commissioner of Internal Revenue, whose decision in the matter shall be final.

Use of Standard Spirits.

In the case of manufacturers using spirits denatured with the standard agent, and those persons employing such spirits for heat, light and power, it is probable that no bonds will be required, but it is understood that a license, to be issued without charge, will be provided for, so that the Internal Revenue Bureau may have a record of parties who make more or less regular purchases of denatured spirits. It has been suggested that license should only be required for persons buying certain quantities of denatured alcohol at a time, which would exempt the small household users who would buy a few gallons only for heat and lighting purposes. The general pur-

pose of the regulations, it will be noted, is to enable the bureau to trace unusually large purchases of denatured spirits, which might be made by unscrupulous persons for the purpose of illicit purification.

There seems to be little doubt that the bureau will adopt as a standard denaturing agent about 5 per cent. of wood alcohol with a small quantity of pyridine base, which would not only give the mixture strong toxic properties, but an odor so offensive as to prevent its use as a beverage, although not sufficiently powerful to make it objectional when burned. The commissioner is clothed by the provisions of the law with ample authority to authorize the use of special denaturing agents peculiarly suited to the manufacture of certain products, and an interesting development of the application of the law will be the experiments that will be made to determine just what agents can safely be used. The primary requirement will be that spirits denatured by special agents shall be rendered nonpotable.

Production of Denatured Spirits.

The manufacturers of small internal combustion engines, and especially the concerns that are producing these engines in connection with the manufacture of agricultural machinery, &c., have submitted a number of inquiries with regard to the regulations that will be adopted for the government of producers of denatured spirits. The impression appears to be quite natural in the West that under the new law any farmer may make alcohol on his own premises from surplus grain, fruits, vegetable refuse, &c., have it denatured by an official of the Government and employ it to run an engine to operate his agricultural machinery or for heat and light. It can be very positively stated that such methods of distillation will not be permitted under the regulations now being prepared. Every producer of grain alcohol designed to be denatured will be obliged to comply with all the laws and regulations which now govern the manufacture of taxable spirits. The minimum capacity of a distillery will be 500 proof gallons daily, a requirement that will shut the farmer out of the manufacture of alcohol, except in a very few isolated cases. The regulations will further provide that before the alcohol is withdrawn from the distillery warehouse it shall be denatured in the presence of an authorized Government officer, with an approved denaturing material which renders it unfit for use as a beverage, such material to be furnished by the distiller at his own cost. It is quite possible that in certain agricultural sections, especially in the great grain district of the Northwest, co-operative distilleries may be established in which the farmers in the surrounding country may have their surplus products worked up into alcohol at cost. It is more than probable, however, that the use of such cheap raw materials as molasses, by-products of beet sugar manufacture, &c., will enable the large commercial distilleries to produce denatured spirits at a price so low that the farmers, even in the most remote regions, will find it more profitable to buy their spirits than to distill them.

It is confidently predicted that denatured spirits will be obtainable in all the leading markets at less than 20 cents per gallon within one year after the law goes into force. This price will be higher than gasoline in the leading industrial centers of the East, but would be about on a par with that product in the West and South. For power purposes the efficiency of alcohol and gasoline is practically the same, gallon for gallon, but for lighting purposes it has been conclusively demonstrated that a gallon of alcohol is equal to exactly two gallons of kerosene, so that at 20 cents denatured spirits would be considerably cheaper than kerosene, in any part of the country.

W. L. C.

The large chimney of the Colwell Lead Company, at Bayway station, Elizabeth, N. J., which was destroyed by a bolt of lightning July 4, was successfully wrecked a few days later. On July 9 the material for the new chimney arrived and in three days it was completely rebuilt. On Thursday of the same week steam was turned on and the plant placed in operation. The output includes enameled iron bath tubs and other sanitary supplies.

Improvements in Rolling Iron and Steel.*

BY JAMES E. YORK, NEW YORK CITY.

The honor so fairly earned and so incompletely and tardily paid to Henry Cort, the inventor of the puddling furnace and the rolling mill, has been fully set forth by Charles H. Morgan and needs no further emphasis here.

In view of the importance of the rolling mill in the

Forty years ago the bulk of the metal rolled was iron. Rolling iron was in some regards simpler and in other regards more difficult than rolling steel. Iron was adapted to quicker reduction, being softer and capable of sustaining greater heat without injury. It was inherently

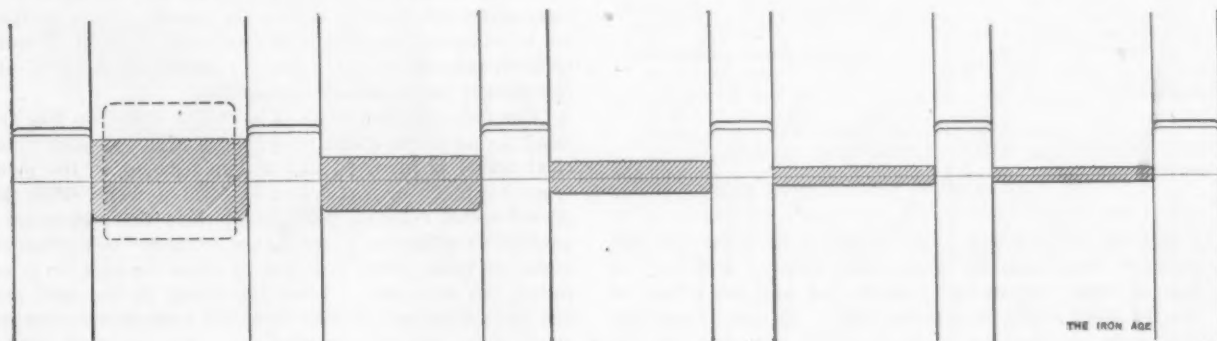


Fig. 1.—Method of Rolling a 6-In. Flat.

treatment of iron and steel the paucity of information concerning it is surprising. With the exception of a book, written about 35 years ago by Peter Ritter von Tunner, and of desultory articles on simple sections which have appeared in technical journals, I know of

weaker than steel at a rolling temperature, even when properly heated, but piles could be made conforming to the finished section, which was a great advantage in making flange sections.

In the early stages of this business the market called

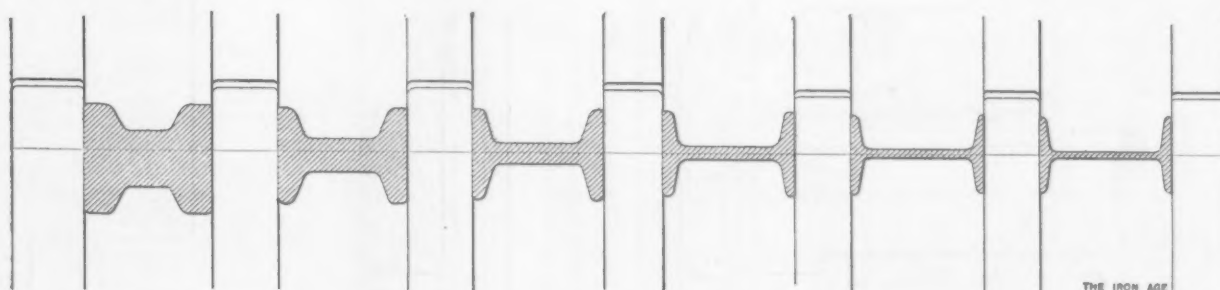


Fig. 2.—Method of Rolling a 6-In. Beam.

no publication attempting to treat this subject, although volumes have been written on the scientific theory and technical manipulations involved in other branches of the iron and steel industry. This strange anomaly may be due to the fact that roll turning cannot be called a scientific business. It does not ordinarily come within the range of an educated engineer; yet it cannot be performed by an ordinary mechanic. It demands some of the qualifications of an engineer in designing and those of a mechanic in execution. The men who have followed this trade have controlled the training of their successors. In many cases the technical knowledge required has been handed down from father to son, and there has been a motive of private interest to prevent its public dissemination. Moreover, the statement of the various principles involved in the process would require, besides manual experience, a degree of scientific knowledge which roll turners do not usually possess; and, finally, any book on the subject in order to possess real practical value would have to be so fully illustrated as to make it very costly to publish.

Regarding my own experience, I may say that I served a six-year apprenticeship at the trade of roll turning at Wednesbury, South Staffordshire, England, and later accepted a position as head roll turner, believing that I fully understood the technical points of the business, but after a short time I realized that if there were any theories governing the practice I still had to acquire them.

* Paper read at the joint meeting of the Iron and Steel Institute and American Institute of Mining Engineers, London, July, 1906.

for simple forms only, such as flats, rounds and squares, but with the advent of railroads and other commercial demands it became necessary to roll more complex sections, such as rails, beams, channels and tees, which add-

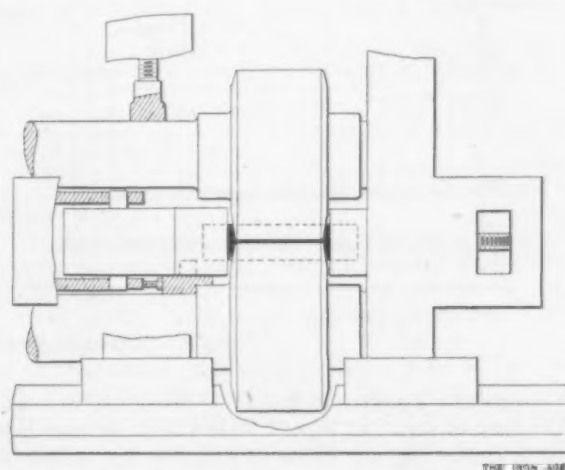


Fig. 3.—Elevation of the York Universal Mill, Showing the Method of Rolling an 18-In. Beam with 6-In. Flanges.

ed very materially to the difficulties in the art of roll designing. These difficulties I will attempt to explain.

Fig. 1 illustrates the rolling of a flat 6 in. wide and $\frac{1}{2}$ in. thick. This was undoubtedly the first rolling ever

done in grooved rolls and represents the simplest section that we have to make, and the only shape rolled in closed grooves to which the principle of uniform flow of metal from rolling contact can be applied.

It is recognized by all experts that metal flows under pressure in the direction of least resistance, which in rolling is at right angles to the journal of the roll, or

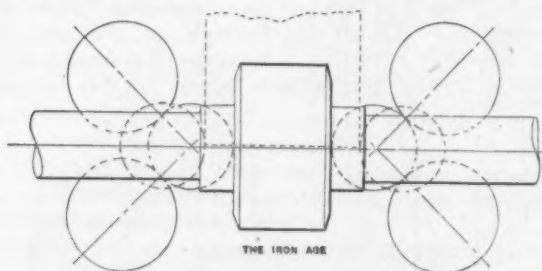


Fig. 4.—Plan of the York Universal Mill.

lengthwise of the bar. The result is to make the bar stronger longitudinally than transversely; and this is true of every bar except rounds and squares, either of iron or steel rolled in grooved rolls. In some cases the difference amounts to from 10 to 15 per cent. of the strength.

The most important physical effects are produced on the metal during the last stages of rolling. As the temperature decreases and the section becomes thinner greater resistance is offered to reduction, and there is

The billet or ingot from which any flanged section is rolled in an ordinary mill must have dimensions practically equaling or exceeding the extreme dimensions of the section to be produced, although the actual area of metal in this section will be much smaller than that of the original mass. Moreover, the first shaping groove must be wider than the mass, in order that the latter may enter it. It follows that the reduction of the metal by rolling pressure is wholly in one direction, and this result is inseparable from the conditions presented by ordinary mills.

Fig. 2 shows how we rolled, two-high, an ordinary 6-in. beam. Modern mills are three-high, but the same principle governs. This is one of the easiest flange sections we have to roll, because it has an equal amount of metal on each side of the pitch line or center of the mill, and the flanges are of equal dimensions.

The difficulty encountered in rolling a section like this (and found to be still greater in sections of unsymmetrical form) is involved in the displacement of the metal from a square or flat billet to form a web. This displaced metal runs to length, and since there is no commensurate reduction of the flange parts of the section the metal of those parts is liable to crack because it is not rolled, but stretched. After the blank in the first pass has been filled out a more uniform reduction of the various parts can be provided for. The finished section shown in Fig. 2 has a flange 3.33 in. wide, with a web about 0.23 in. wide, the latter having received a transverse reduction about 12 times that of the cross section of the flanges.

The rolling of flange bars involves the thinning of the

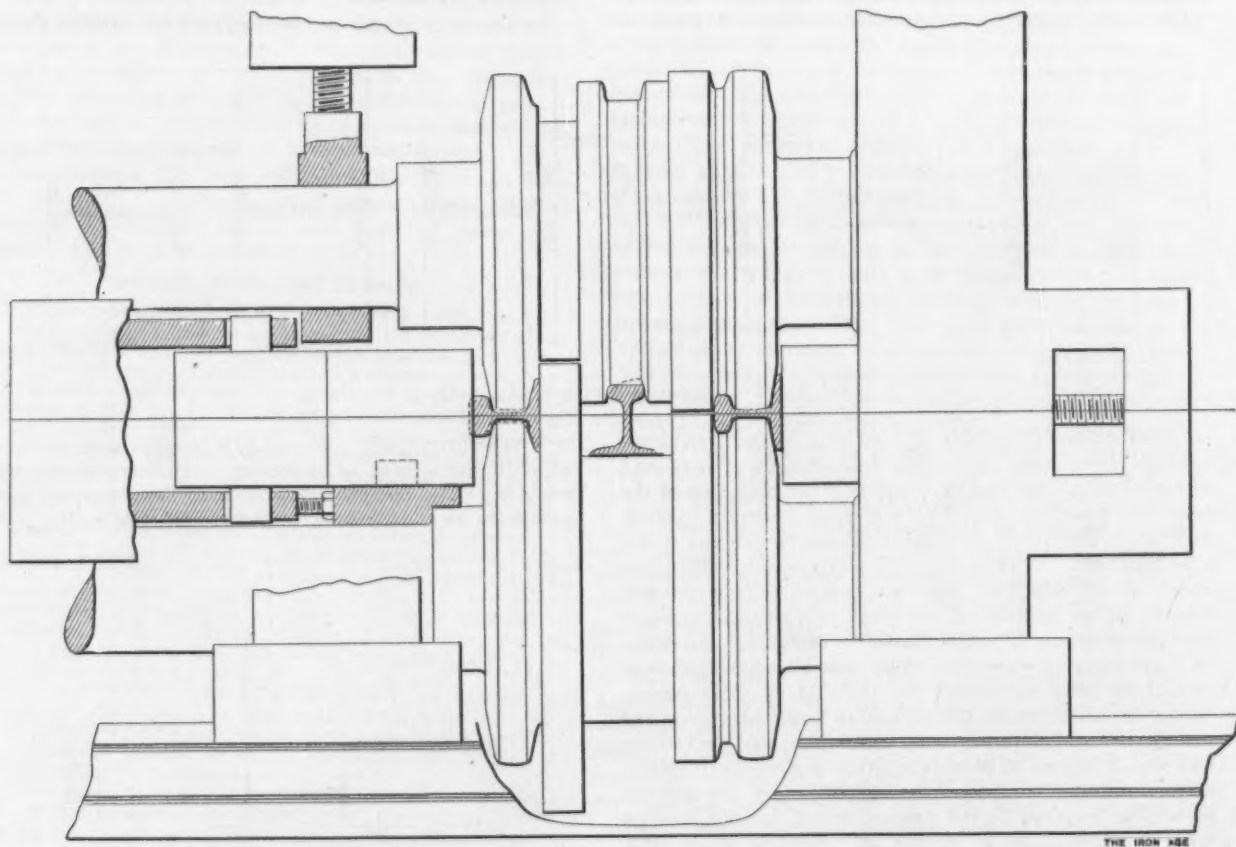


Fig. 5.—Method of Rerolling a T-Rail by the Universal Mill.

consequently a greater "fining" of the grain in steel or the fiber in iron. It is well known that in large ingots there is scarcely any fining of the grain by rolling and that this effect is only reached when comparatively small dimensions have been attained. (Of course the result is influenced also by overheating and by the chemical composition of the metal.)

The only important modern change in the process of rolling is the addition of a third roll, which doubles the capacity of the mill and constitutes the three-high system.

flange sideways by forcing into the groove metal much thicker than the recess provided. This is rather a wedging and drawing than a rolling action, and all such flanges are tapered to permit their exit from the rolls. At the ends of finished bars of this character considerable waste is created by the different roll dimensions, which prevent uniform surface speed of the metal during the operation.

Another objection to this method of making flange bars is that it is impossible to distribute the metal in scientific proportions. In most of the beams rolled to-day

by the prevailing method the web is thicker by at least 20 per cent. than it need be, to harmonize with the other dimensions of the bar. The reason (if we take Fig. 2 as an instance) is that the part of the roll which forms the web is 3 in. greater in diameter than the part which comes into contact with the widest part of the flange,

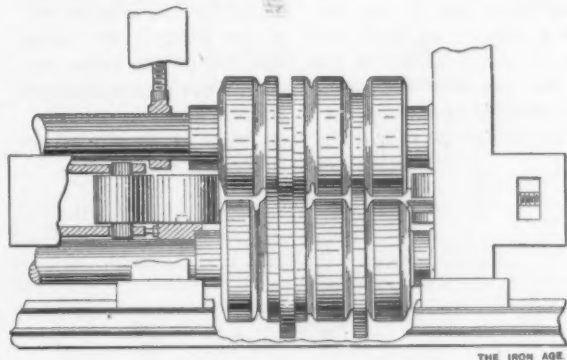


Fig. 6.—Method of Rerolling a Girder Rail by the Universal Mill.

and has at least 9 in. per revolution greater surface travel than the part in contact with the end of the flange. The flange must therefore either slip or stretch to accommodate itself to the larger diameter. This causes the web to buckle or corrugate when rolled down to the proper thickness. These difficulties are greatly increased

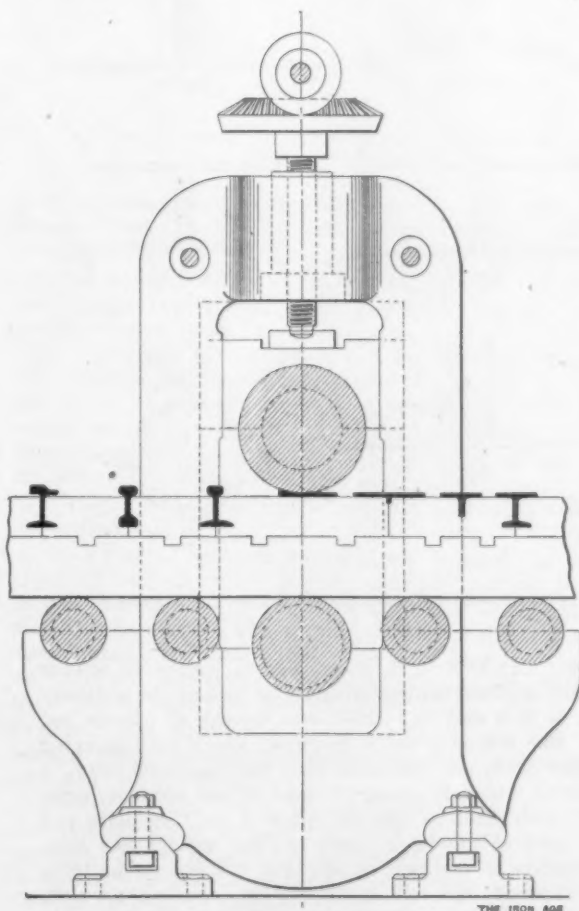


Fig. 7.—End Elevation of the York Transverse Mill.

in rolling wider flanged sections, whether large or small in other dimensions. In fact, it is almost impossible to produce, in an ordinary rolling mill, any shape with a flange equal in width to the total height of the section. The effect of the difference in surface speed of rolling on various parts of rails, beams and other flange sections is, in my opinion, the cause of a large number of otherwise unaccountable fractures in service, due, probably, to permanent internal stresses rolled into the bar.

While engaged in the manufacture of iron beams about 30 years ago, it was suggested that if beams could be rolled with wider flanges, greater height and thinner webs at least 20 per cent. greater carrying strength could be secured for a given weight. This led my brother and myself to design and build what is known as the York universal mill, for rolling sections with wide flanges and thin webs, or the usual sections when desired. The front elevation and plan of this mill, which is a radical departure from the process of rolling illustrated in Figs. 1 and 2, are shown in Figs. 3 and 4. The advantages of this mill are:

1. It dispenses with grooves entirely and gets uniform sections without this provision.
2. It eliminates the wasteful and difficult method of displacing metal to form a web which is out of all proportion to the other parts of the section.
3. No technical knowledge is required to design the rolls.
4. The operation is exceedingly simple, and the same rolls can produce a properly proportioned section weighing 50 or 150 lb. per ft.
5. By the old methods the web increases in the same proportion as the width of flanges, which is a great waste of metal.
6. This mill is adapted to roll either scrap or new steel to

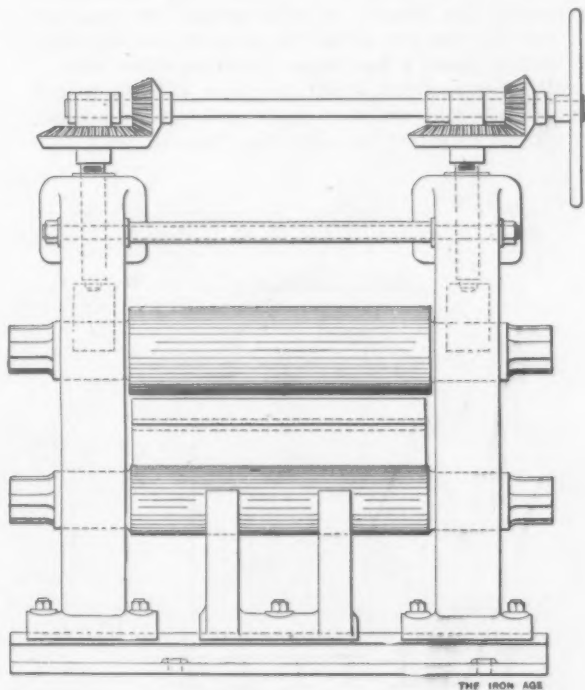


Fig. 8.—Front Elevation of the York Transverse Mill.

sections at least 50 per cent. less in weight per linear foot than the common forms.

7. The beam produced by this mill has the same tensile strength transversely (where it is required) as in the longitudinal direction.

8. The rolls can be adjusted either at the commencement or during the operation, in order to have the web thinner and the flanges thicker, or the reverse.

9. This mill can roll a bar having one flange thicker than the other, since the dimensions of the flanges can be modified to suit requirements.

This mill consists of a pair of horizontal rolls positively driven and a pair of vertical rolls run by the friction of contact against the bar. A line through the axis of these vertical rolls would intersect the center of the horizontal rolls.

The horizontal rolls work upon the sides of the web and shape the inner contour of the beam, while the vertical rolls shape the outer flange surfaces. Both horizontal and vertical rolls are connected by a screw device, so that the movement in all the rolls shall be simultaneous; an arrangement which secures the proper relative reduction of the flanges and the web.

Fig. 3 represents the rolling of an 18-in. beam with 6-in. flanges. The slab or ingot for making this section is 29.5 in. wide and 6.25 in. thick. These dimensions give a reduction on each flange of $5\frac{1}{2}$ in. sidewise and a reduction on the web of $5\frac{1}{2}$ in. at the same time, which produces a beam 18 in. x $\frac{1}{2}$ in., having the usual taper to the flanges.

The rolls used in this mill weigh only one-quarter as much as those ordinarily used, and the power required is much less than that of the ordinary mill, for the reason that it is a rolling process, both horizontal and vertical, instead of a partly wedging and stretching action, as shown in Fig. 2.

The mill is adapted without changing rolls to make

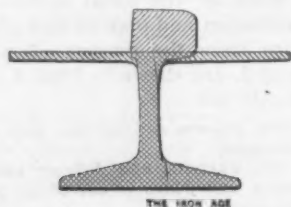


Fig. 9.—An Illustration of the Result of Transverse Rolling.

any reasonable weight of beam having wide or narrow flanges, up to the width of the face of the vertical rolls. It also rolls tees of different dimensions having any length of leg or flange in the beam rolls, the vertical rolls forming the flange. A beam section cut longitudinally through the web forms two tees of half the height of the beam; hence a tee can be rolled on either side of the mill. Tee sections, about the most difficult to roll in an ordinary mill, are very easily made by my process.

It was my intention when building this mill on a com-

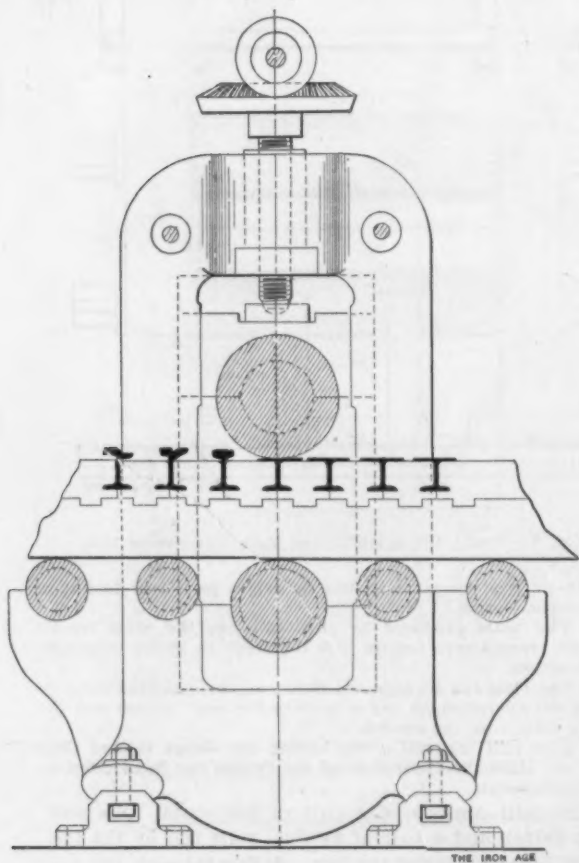


Fig. 10.—End Elevation of the York Transverse Mill.

mercial scale to have a blooming mill, in which to roll an ingot down to about 3 in. thick in the web and a proportional thickness in the flanges, but for unavoidable reasons it became necessary to use the finishing mill to do the entire reduction from the ingot or slab to the finished section. This action produced a slight defect in the finished product, the bars not being exactly parallel in the width of the flanges throughout the entire length. In order to overcome this difficulty I proposed to use a pair of supplementary rolls to work on the edges of the flanges, these rolls to be placed in line of the main rolls, and to be run at the same surface speed of

delivery as the rolls in the mill proper. These changes have since been installed, and beams of perfect section are now rolled.

Our experience with this process in rolling beams having the width of the two flanges greater than the height of the web showed that it was necessary to feed in the side rolls faster than the horizontal; otherwise in rolling light webs with wide flanges there would be a buckling action in the web, caused by the greater roll surface contact on both sides of the flange. The mass being of course stiffer in the direction of the cross section the web was then held back to the average speed of the flanges and caused it to corrugate.

The advantage of a light web beam is illustrated as

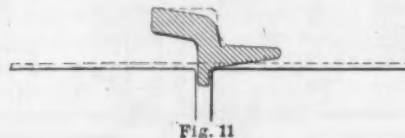


Fig. 11



Fig. 12

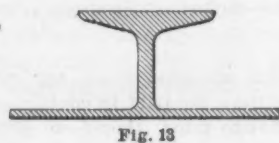


Fig. 13



Fig. 14

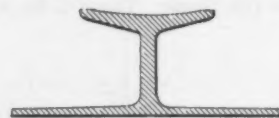


Fig. 15

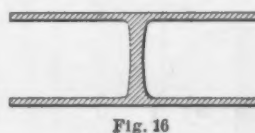


Fig. 16

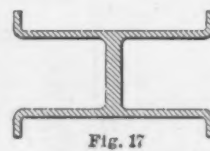


Fig. 17

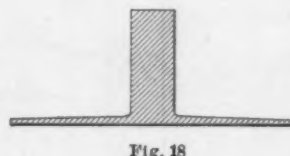


Fig. 18



Fig. 19

Figs. 11 to 19.—Special Sections Rolled by the Transverse Mill.

follows: The 18 x $\frac{3}{8}$ in. beam, Fig. 3, weighs 42 pounds per foot, and the nearest comparable size of the ordinary beam is 15 x 0.41 in., which also weighs 42 pounds per foot. The ordinary beam, however, has a load carrying capacity of 18 per cent. less than the light web beam, a difference which is larger in most of our sections, especially those made to take the place of built up plate and angle girders having a much greater weight per foot. In addition to the gain in strength the cost of building up is reduced; this cost in some cases exceeds 40 per cent. of the cost of our rolled beams. Sections having wide flanges which equal the height of the section (or nearly so) are intended to take the place of zee bars and other columns. In this case also there is a great saving in weight and cost.

This mill has also been adapted to reroll rails of various types for further service in the track, as shown in Figs. 5 and 6. It is admirable for this purpose from the fact that the rolls can be chilled, thus permitting the proper finishing temperature required to secure the best physical results. This mill can also upset metal from the web into the head and leave the flange the same width,

and it can reroll any flange bar or other sections in a longitudinal direction.

Some years ago I took up the problem of making a steel tie or sleeper that would meet all railroad requirements and at the same time be able to compete in cost with the wooden ties now in general use. To meet these conditions it was necessary to use worn scrap rails for the raw material, since it must be obtainable at a low price in large quantities.

First, I designed sections for a steel tie which rail-

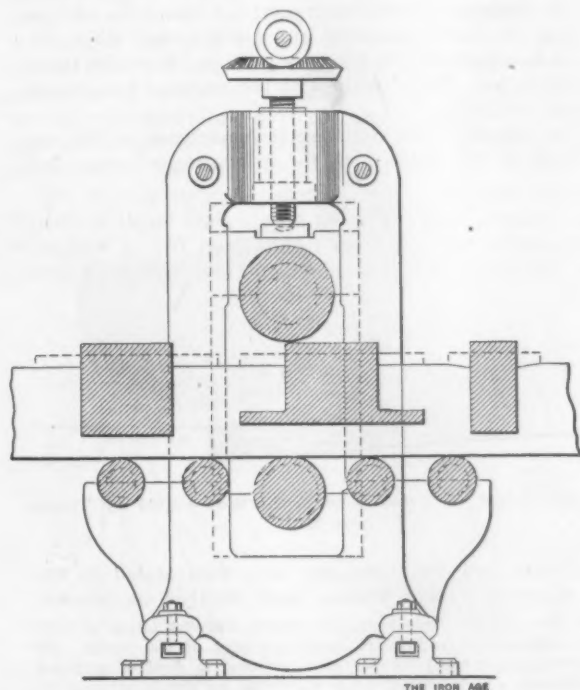


Fig. 20.—End Section of the York Transverse Mill for Rolling Flanges on Ingots.

road engineers said were ideal, provided it could be rolled. Then I designed a mill, shown in Figs. 7 and 8, to change the dimensions of a rail without lengthening it in the rolling. This mill can be driven like an ordinary two-high plate mill, or by disconnecting the top roll from the power it may be run by frictional contact with the bar. The latter plan I consider to be the simplest and the best, for the reason that access to the mill can be had in all directions by having a hydraulic motor connected with a rack in a pinion on the bottom roll. Both plans have given good results. The simplest method of all, however, is to connect a hydraulic motor between two mills rolling in both directions, which naturally increases the output.

By all other methods the greatest difficulty in longitudinal rolling is to produce sections having wide flanges, but in my mill this kind of rolling is very simple. One part of the bar is rolled without disturbing the other dimensions. Rails that have been used on curves and have lost one-third of the metal on one side of the head can be rolled to form a section having the metal symmetrically distributed on both sides of the web by using a rolling and bending action simultaneously in the mill, as is illustrated in Fig. 9.

In rolling steel rails by the ordinary process the web and bottom flange receive the most physical work in the mill and are finished much colder than the comparatively large mass of metal in the head. The head therefore is the weakest part of the rail. In rerolling an old rail by my process the head receives the greatest amount of physical work, and the finishing passes can be made at a low heat, if desired, thus greatly improving the quality of the metal.

The capacity of the mill in tonnage would be regulated by the number of bars rolled at one operation. There is no difficulty in rolling at least six bars at a time, which gives a safe estimate of from 150 to 200 tons per day of rails weighing from 60 to 75 pounds per yard.

During the rolling of any section in this mill the

flanges can be made thick or thin without any changes of rolls.

This mill is confined to the transverse rolling of lengths not exceeding, say, 10 ft. If greater length is desired a bloom (either of scrap rail or new steel) is rolled to proportionate dimensions of cross section and then rolled to length in our universal mill.

Fig. 10 illustrates the mill rolling tees, tie plates, column blanks and double headed rails. Fig. 11 shows the head of a worn 95-pound girder rail, having a part of the web attached, which is rolled to a width of 20 x 1/4 in. Fig. 12 shows a T-rail section with the head rolled five times wider than its original dimensions. Fig. 13 shows a worn 70-pound T-rail rolled down to a plain tie section without changing the web or flange of the original rail. Fig. 14 shows the same weight rail rolled with a curved base to give elasticity to the tie under moving load. Fig. 15 shows the section with a curved seat for the rail, so as to insure the elasticity of the tie if the ballast in contact with the curved base should interfere with the elasticity of the lower flange. Fig. 16 shows a beam with flanges 9 in. wide and 3.25 in. in height of section, rolled from a 70-pound rail. Fig. 17 shows a section rolled with wide flanges, leaving the web with-

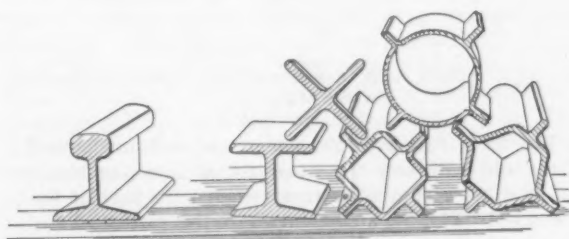


Fig. 21

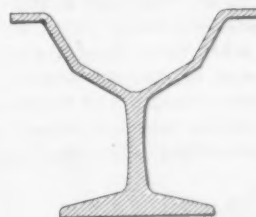


Fig. 22



Fig. 23

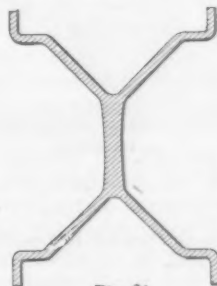


Fig. 24

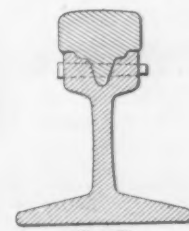


Fig. 25

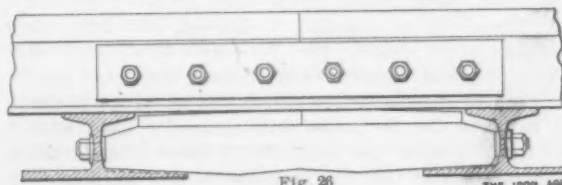


Fig. 26

THE IRON AGE

Figs. 21 to 26.—Sections Rolled by the Transverse Mill.

out change of form. Fig. 18 shows a flange rolled on a 3 x 0.75 in. flat bar to six times the width of the thickness of the flat. Fig. 19 shows a column section rolled from a 70-pound rail. Fig. 20 is an end elevation of this mill, which shows the rolling of flanges on large and small ingots and flat slabs for blanks for the finishing mill. This arrangement dispenses with the unequal displacement of metal to form the web and removes the greatest difficulty in the rolling of flange sections and makes possible the production of sections from new steel that it is now impossible to produce by present methods. Fig. 21 shows some of the various sections rolled from rails to be used for columns, telegraph poles, trolley

poles, beams, fence posts and other purposes. To produce these sections it is necessary, first, to roll in a transverse direction to get the proper dimensions and then to bend in the mill in a longitudinal direction.

The following shapes can be rolled by using the mill for transverse rolling and longitudinally for bending

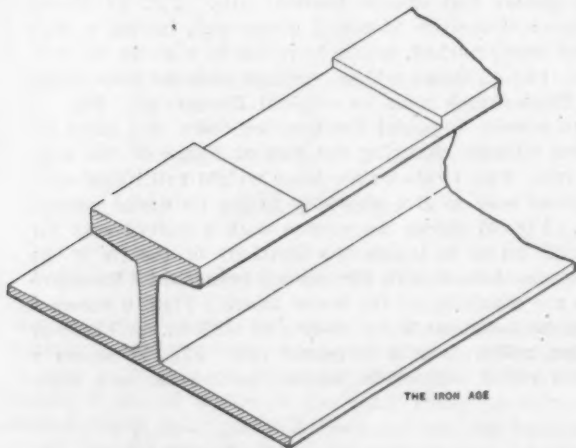


Fig. 27.—Tie Section, with Recess for Rail, Rolled by Transverse Mill.

hot: Fig. 22, a rail with the flange and web unchanged from the old rail and the head rolled into the shape given. Fig. 23, a similar section rolled, with part of the web removed. Fig. 24, a section where the rail head and flange have both been rolled to the necessary width and then bent to the shape longitudinally. Fig. 25, a suggested base for a rail with a movable head. Fig. 26 shows a side view of a rail joint made from short pieces of worn rail. This joint is designed for the purpose of meeting any demands of adjustment, strength and cheapness. Fig. 27 shows a tie with a recess rolled to form a rail seat, so as to prevent track spreading. Fig. 28, col-

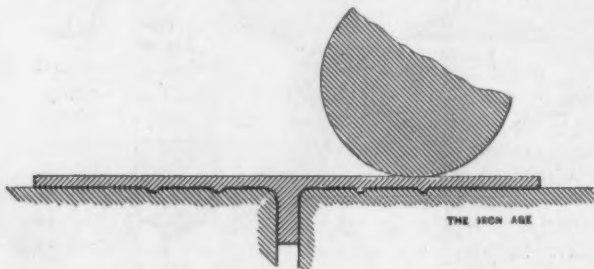


Fig. 28.—Column Section, with Projections Parallel to Length, Rolled by Transverse Mill.

umn sections, with rolled projections parallel to the length. These can be changed, if desired, into indentations or any other shape. Fig. 29 shows taper sections of narrow or great width; could be used for many purposes. Fig. 30 illustrates the utilization of short pieces of rail to make the tie plates now generally used with wooden ties. I show one only, but I have already designed eight sections that can be made by this method.

All the sections described above, with the exception of the ingots shown in Fig. 20, are designed to be made from old worn rail sections. The girder and guard rails of electric and street car lines can be used to make the same class of material, and while the section would be of greater height it is capable of being rolled with the same facility as worn tee or double headed rails.

The method is not confined to the use of rail sections alone as material for rerolling. We take beams of all sizes, split the two flanges off hot in the machine and use them for tee sections, column blanks and other purposes after rerolling. Angles and in fact bars of any kind are similarly available. The presence of holes in scrap material does not interfere with rolling by this method.

Some of the many sections which can be rolled by this process are shown in the accompanying illustrations. I have already designed several hundred shapes that

differ from existing sections, either in weight or design.

It is adapted for flanging plates and sheets, hot or cold, and for making angles from flats; also, for rerolling plates and sheets with decorative designs on their faces, for artistic and industrial purposes.

In planning these mills I kept in mind the necessity of making them strong to resist the hard usage of rolling mill practice; simple, so that they could be readily adjusted, and also capable of operating with unskilled labor, except that of the mechanic to run the machine and the heater to heat the material. The rails can be fed into the machine simply and quickly, and when the rolling is completed the hot bars push out laterally those already rolled. The functions of the machine are almost entirely automatic.

The economic and commercial importance of the application of this method to the utilization of scrap for

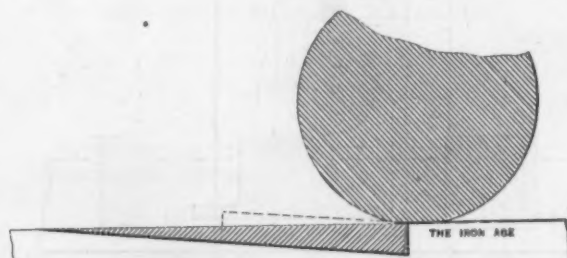


Fig. 29.—Taper Sections, Wide or Narrow, Rolled by Transverse Mill.

ties, joints and tie plates has been well stated in the *Iron and Coal Trades Review*, April 10, 1896, as follows:

At the present time there are about 450,000 miles of railroads constructed in the principal countries of the world. Of this mileage, probably 33 per cent. at least is double, counting the sidings, which would raise the total as single mileage to 600,000 miles. The weight of metal required in any system of iron or steel sleepers will of course depend mainly upon its form and method of application, but a conservative mean would probably be 100 tons to the mile of single line, which would give us, for the railroads of the world, a possible supply of 60,000,000 tons, or, roughly, about 40 times the total output of Bessemer steel in Great Britain during the last three years. Clearly, therefore, if metallic sleepers were substituted for timber the steel trade would profit enormously.

Since the above was published the *Archiv für Eisenbahwesen* reports an increase in mileage at the end of the year 1903 to 533,978 miles, which, including side

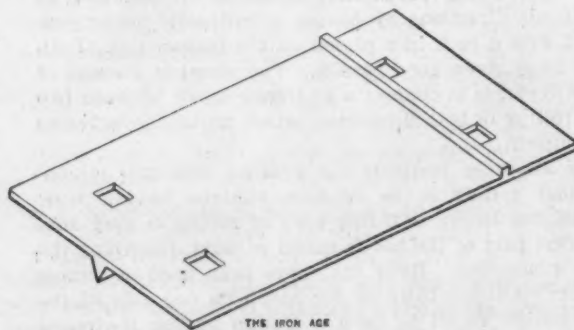


Fig. 30.—Tie Plate, from Short Piece of Rail, Rolled by Transverse Mill.

tracks, is equivalent to about 700,000 miles. Estimating on a basis of 125 tons of steel per mile of single track the total quantity of steel used reaches the enormous total of 87,500,000 tons.

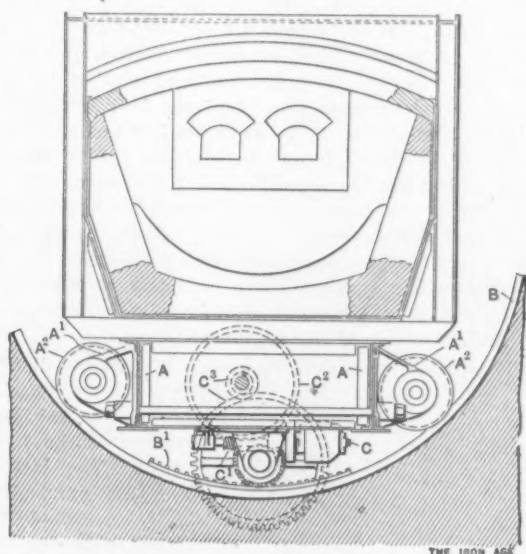
If, as I have attempted to show, these rolled bars can be made from material that has already fulfilled the purpose for which it was originally made—namely, its use as rails—a great economic advance will have been effected.

It is reported that the next river and harbor bill will provide for a third lock at Sault Ste. Marie, Mich., to be located north of the Poe lock. It will be built to accommodate a draft of 25 feet, and it is estimated will cost about \$10,000,000.

A Method of Tilting Open Hearth Furnaces.

John C. Cromwell, of the Garrett-Cromwell Engineering Company, Cleveland, Ohio, has devised a new method of mounting tilting open hearth furnaces. Difficulties have been encountered with some of the devices for tilting heretofore in use. The expansion due to heat causes trouble with rollers journaled upon a supporting base, and where the curved base of the furnace rests directly on a horizontal foundation, upon which it rolls back and forth, it is often necessary to roll it so far forward when the bath is low that the gas ports pass out of register with the regenerator conduits, while at times cold air rushes in. The method of tilting devised by Mr. Cromwell secures rotation about a definite center and also has the advantage that there is no variation in the strains while the furnace is tilted.

The accompanying illustration shows an open hearth furnace of usual construction mounted upon a framework of girders A. At each end of the frame are supporting brackets A1 with journaled rollers A2 which ride on the



A Method of Mounting Tilting Open Hearth Furnaces.

curved trackway B. The curve has its center about the gas and air ports. The segmental rack B1 is employed in connection with an electric motor C and suitable gear for the tilting operation. The driving connection shown in the illustration is that of a worm shaft C1 and wheel C2 transmitting power from the motor to gears C3, which in turn actuate a cog meshing with the segmental rack B1. By the use of this reduction device the furnace is under positive control in all positions. It may be rotated about an axis, which will be the line passing through the centers of curvature of the two supporting rails. The tipping of the bath in tilting will not disturb the state of stable equilibrium, the center of gravity being close to the axis of rotation. The ports are not exposed to cold air, and combustion may be continued at all positions of the furnace. Whatever the expansion of the furnace due to heat the frame upon which it is mounted always receives the thrusts along the same lines.

A modification of the supporting structure shown in the illustration has been devised by the inventor. In this form short equalizing beams instead of bearing wheels are journaled in the ends of the furnace frame and wheels are journaled in each end of the beams. Each beam and its wheels go to make up a single support, which as a unit is journaled in the end of the frame. This construction gives a greater number of bearing wheels and can be employed in the case of unusually large furnaces.

A business depression is prevailing in South Africa, which is generally attributed to the shock to the mining industry when the British Government interdicted the importation of Chinese labor to work the mines. The

contrast with recent conditions is the greater for the reason that most South African trade centers had for some years been enjoying rather unusual prosperity.

To Test Alcohol as Fuel.

An investigation into the possibilities of alcohol as a fuel in small gas engines is about to be carried out by Prof. Charles E. Lucke of Columbia University, New York City, for the United States Department of Agriculture. It is expected that after January 1, when the free industrial alcohol law goes into effect, very large quantities of denatured alcohol will be used as fuel for small engines, in automobiles, boats and for stationary work.

The advantages of alcohol for these purposes are numerous, especially the lack of odor in combustion and safety from fire over kerosene and gasoline, because it is possible to put out an alcohol fire with water, where it is impossible to extinguish burning oils. In spite of all that has been done to secure the passage of the bill it is a fact that there is very little information of value on the subject, and it is the purpose of the investigation to supply this.

Professor Lucke will collect the results of the experiments conducted on the use of alcohol in engines which have been carried out both here and abroad and will expand the information by further experiments, inviting those who have patents on vaporizers, carburetors or complete engines to submit the apparatus to tests in his laboratory. These tests will be conducted without any expense whatever to the public, except the transportation of the apparatus. The reports of the tests will be published in the bulletin. Any data or shipments should be addressed to Prof. Charles E. Lucke at Columbia University, and they will be returned when the work is completed, due acknowledgment being given for the assistance rendered.

All of the data, together with a complete bibliography of the subject, will be issued by the Department of Agriculture in the form of a bulletin for free distribution on January 1, 1907.

Cast Iron Pipe Specifications.

The Committee on Water Works Standards presented a form of specifications for cast iron pipe at the twenty-sixth annual convention of the American Water Works Association held at Boston, July 10 to 14. Conference committees on such specifications had been appointed by the New England Water Works Association, the American Society for Testing Materials, the Western Society of Civil Engineers, and the manufacturers. A meeting of this committee brought out a very small attendance, and when the conclusions of the conferees were submitted to the members of the various committees so much opposition developed that it was evident an agreement could not be reached. The differences referred to in the report presented at Boston relate to the number of classes into which cast iron pipe shall be divided. Walter A. Wood, representing the American Society for Testing Materials, and the representatives of the American Water Works Association compromised their differences on two different outside diameters for each nominal inside diameter with changes at each 100 ft. of head, making four classes of pipe. The compromise did not meet with general approval, and the committee reporting at Boston submitted a single diameter specification. No action was taken by the convention.

At a meeting of the directors of the Bethlehem Steel Corporation, July 17, the resignations of Edward M. McIlvain, vice-president; Adolph Borle, second vice-president; Henry S. Snyder, secretary and treasurer, and John A. McGregor, assistant secretary and treasurer, were accepted. Their successors were elected as follows: Archibald Johnson, vice-president; Henry S. Snyder, second vice-president; John A. McGregor, secretary and treasurer; B. H. Jones, assistant secretary and treasurer. Mr. Jones has been auditor of the company. The Bethlehem Steel Company is a subsidiary of the Bethlehem Steel Corporation.

A Rotary Blast Furnace Distributer.

To secure uniform stock distribution in mechanically filled blast furnaces many appliances have been devised to overcome the tendency of the large lumps of the charge to drop into the charging hopper on the side opposite the skip incline. Deflector plates have been employed to throw the large lumps toward the skip, so as to leave a uniform charge on the small bell. To an extent these arrangements have been unsuccessful, for the reason that the materials dumped into the stack do not all act alike,

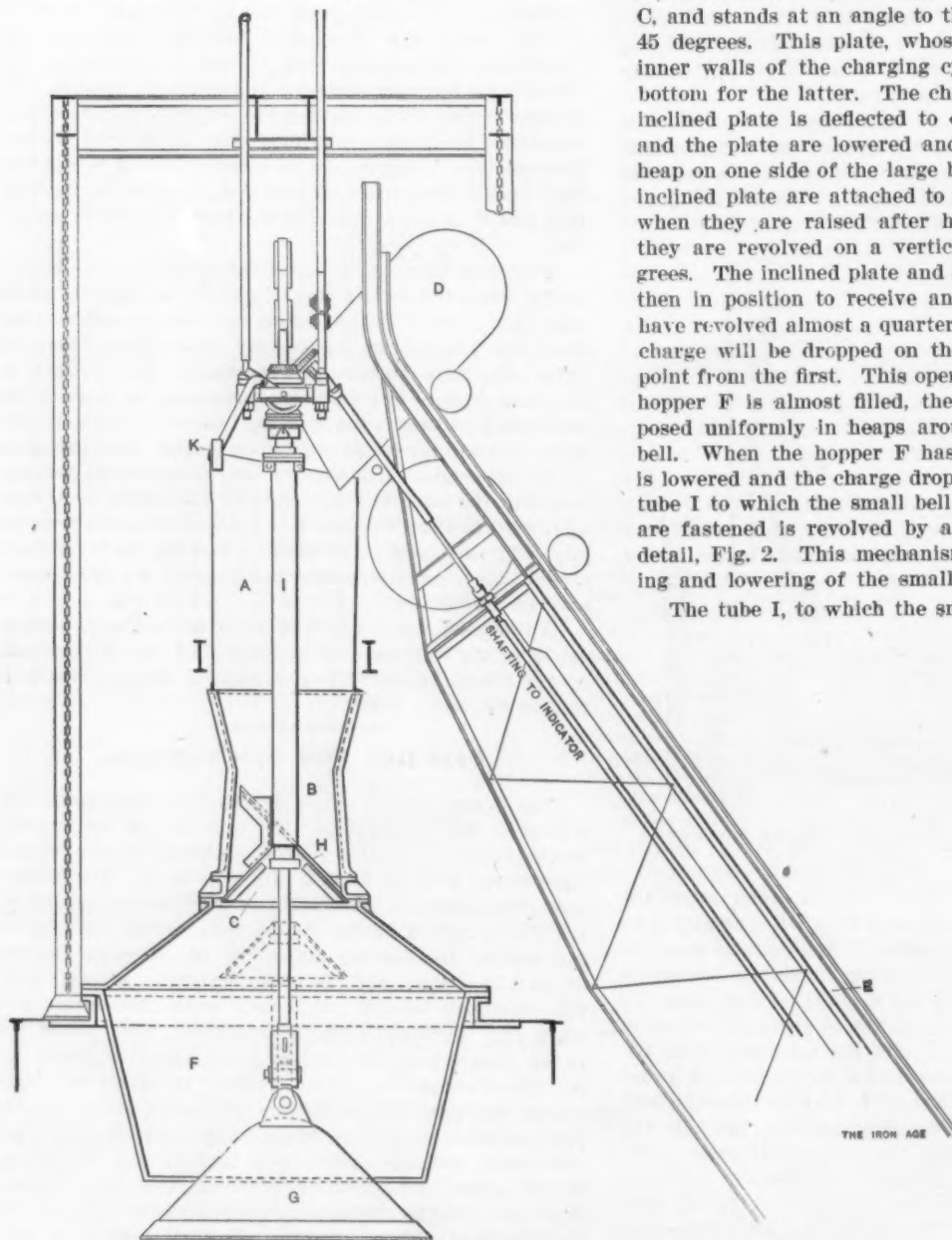


Fig. 1.—The Baker-Neumann Rotary Distributer for Blast Furnaces.

the deflector plates which were set for ore having to be reset for coke and limestone. A rotary distributing device by which this disadvantage is overcome has been patented jointly by David Baker, consulting engineer, Philadelphia, and A. B. Neumann, chief engineer of the Indiana Steel Company, Chicago. It is in successful operation on seven furnaces of the Illinois Steel Company—six at South Chicago and one at Joliet—and on one furnace of the International Harvester Company at South Deering, Ill. The four furnaces of the Indiana Steel Company, Gary, Ind., will also be equipped with the Baker-Neumann rotary distributor. The second installation for the Joliet plant of the Illinois Steel Company is now being made, and the Bethlehem Steel Company, South Bethlehem, Pa., will also equip one of its stacks with the device.

The chief feature of this distributor is its application to the tops in common use on mechanically filled furnaces, as it retains the charging hopper A, referring to Fig. 1, and the charging cylinder B, whose lower end is closed with the small bell C. The charge of ore, coke and limestone, which is conveyed to the top of the furnace by means of a buggy, D, is dumped into the upper charging hopper and is carried on the small bell. The lowering of the latter allows the charge to drop into the hopper F, above the large bell G, which is shown in a lowered position.

The distributing device shown is an elliptical plate, H, which is bolted to or cast in one with the small bell C, and stands at an angle to the vertical axis, commonly 45 degrees. This plate, whose edge comes near to the inner walls of the charging cylinder, forms an inclined bottom for the latter. The charge which rests upon this inclined plate is deflected to one side as the small bell and the plate are lowered and thus it is deposited in a heap on one side of the large bell G. The small bell and inclined plate are attached to the revolvable tube I, and when they are raised after having dropped the charge they are revolved on a vertical axis from 80 to 85 degrees. The inclined plate and small bell being raised are then in position to receive another charge, and as they have revolved almost a quarter of a revolution the second charge will be dropped on the large bell at a different point from the first. This operation is repeated until the hopper F is almost filled, the charges having been disposed uniformly in heaps around the edge of the large bell. When the hopper F has been filled the large bell is lowered and the charge dropped into the furnace. The tube I to which the small bell and the distributing plate are fastened is revolved by a mechanism shown in the detail, Fig. 2. This mechanism is actuated by the raising and lowering of the small bell.

The tube I, to which the small bell and the distributing plate are hung, Fig. 1, is fastened by a coupling to the tube a, Fig. 2. The latter at its upper extremity is rigidly attached to a casting, b, having on its upper face bevel gear teeth and on its lower face ratchet teeth, the functions of which will be described later. The casting b is the supporting member for all of the rotating parts and rests upon a ball bearing interposed between it and the crosshead c. The crosshead is suspended by rods from a beam operated by a cylinder on top of the furnace, through which the raising and lowering of the small bell and associated parts are effected. On the

side of the crosshead c is riveted a segment gear, e, meshing with the bevel gear h, which is mounted on a sleeve surrounding the tube a. The lower face of the gear h has ratchet teeth adapted to engage the pawl k, pivoted on the side of the collar j. The latter is secured to the tube a, so that this part and a and b all move in unison. The tube a is free to revolve within the crosshead c and the gear h. When the charging bell is raised or lowered the segment gear e is caused to rotate with respect to the gear h, because the attached arm f is permanently tied by the link g to a fixed member of the structure, the hopper of the furnace, as shown at K in Fig. 1. The partial rotation of the segment e, corresponding to the raising of the bell, causes the gear h to rotate from left to right. This motion is participated in by the collar j and all the attached parts, including the charging bell,

since the pawl *k* is then engaged by the ratchet teeth on the lower side of *h*. With the lowering of the charging bell the motions are all reversed and *h*, rotating from right to left, produces no turning of the bell, because the ratchet teeth on the lower side of the casting *b*, engaging a pawl pivoted at *n*, prevent this reverse rotation. The bevel gear on top of *b*, through the bevel gear *r*, and a universal jointed shaft extending down the side of a skip hoist incline to the stockhouse floor, operate an indicator to show to the operator just what part of the receiving hopper is being charged at any instant.

Furnaces equipped with this device have shown an increased output, a decreased coke consumption per ton of iron melted and better maintenance of linings. To bring up the heat on one side of the stack it is not necessary to charge an excess of coke that will spread all over the interior, as the coke can be deposited where required. As furnaces become irregular in the action of stock travel, due to internal reactions caused by slips and explosions, it is of great advantage to charge at certain spots. This can be done by means of the distributing plate, as the operator can set it at will to charge stock into the furnace

start on the old sites again, but the insurance companies are slow in responding. Some of them will not agree to pay except on a heavy discount, and even then in many instances the insured cannot tell when he will get his money. The past week the writer met one of the principals of one of our large hardware houses that was burned out in the fire. The headquarters of the house have since been in Oakland. In answer to a question the gentleman remarked that he did not know when his firm would locate again in San Francisco. The reason was that it carried a heavy line of insurance, but could not tell when the companies would settle. The merchants of this city expect that their brethren in the East will exercise their moral influence on the companies so as to have them act in a more businesslike way in discharging their liabilities to those who have patronized them so long. When the insurance business is closed, the task of putting up the larger buildings will be pursued with great vigor, but in any event outside money will have to do a good deal of rebuilding. There are numerous leases under which the lessee will have to rebuild.

Business in all lines is active enough for this time of

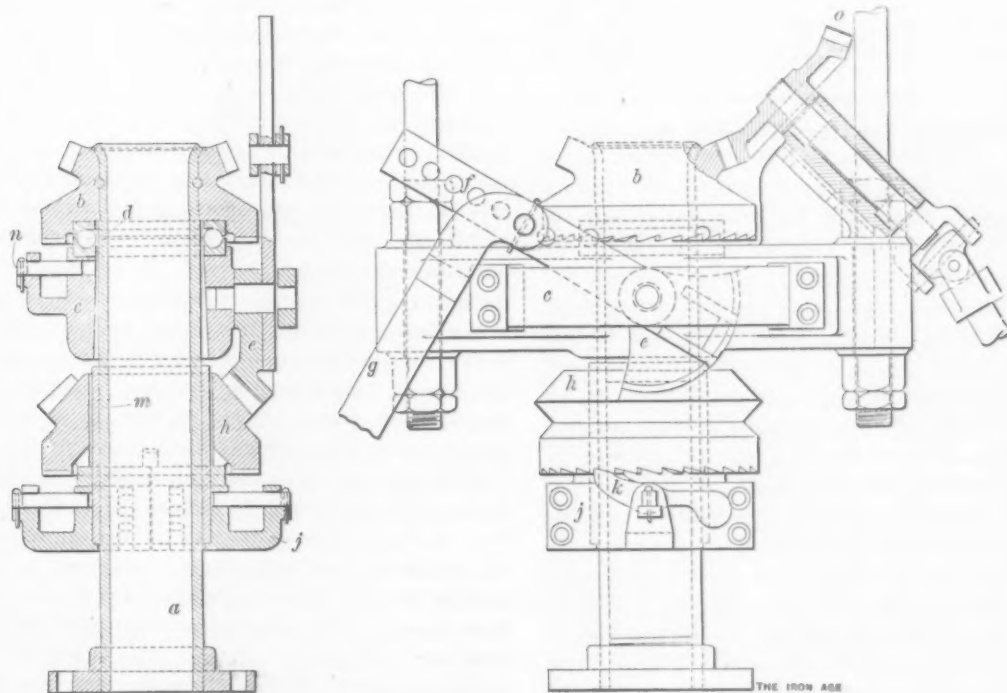


Fig. 2.—Detail of the Mechanism for Rotating the Distributing Plate.

at any point desired. Likewise the inner walls of the furnace can be built up by a complete regulation of the charge. In a similar manner the stock can be leveled at any time, the furnace being fed on one side more than on the other.

Insurance Delays Hamper San Francisco.

SAN FRANCISCO, CAL., July 13, 1906.—Activity in building operations is to be seen on every side. The progress being made in converting Van Ness avenue and Fillmore street into big business centers is surprising. Many dwelling houses are being converted into stores, which take the place of the great downtown establishments. In fact, the owners of the latter are locating themselves wherever possible from Van Ness avenue to Steiner street, and east from Van Ness are gradually encroaching on the burned city. The manufacturing section is also being covered with some large structures, of wood principally, though many are of corrugated iron.

Many permits have been issued to restore steel and stone or brick buildings that were only partially damaged—some to build new ones. Here, however, there is a delay, owing to the magnitude of the calamity. Most of the property owners and merchants are waiting patiently for the settlement of their insurance before making a

the year. The season is late, as the rains kept up to the close of June, so that we will have very little grain to market until next month. Clearing houses exchanges are keeping up wonderfully well. For the week before last they were \$3,000,000 more than for the corresponding week last year, and this week the increase has been over 6 per cent. This, with our terrible record of fire and earthquake, is truly remarkable. The season's sales of agricultural implements have been large, and the fall demand will be large, too. The mines have been doing very well, owing to the constant supply of water that we have had, and there never was such a year for lumber as this. The sale for export of 10,000,000 barrels of oil a year for South America by the Crockers, representing the Associated and Union oil companies, will put that industry in this State on its feet, and increase largely the demand for oil machinery, pipe and oil well supplies of all kinds. There is a prosperous six months before our hardwaremen. In some cases supplies cannot now be had. There has been a scarcity of cars, and building operations are hampered for want of material. In the electrical business, for instance, at the present moment, there is no such thing as getting wire or dynamos.

There is an improvement in the dock labor situation, and the Siberia took out a big cargo to China, including a large quantity of machinery and wire nails. J. O. L.

iron and steel interests which own lake vessels or ore or other roads will be called upon to sell such properties need scarcely be taken seriously.

The Reading of the Pig Iron Statistics.

It makes some difference how statistical statements are interpreted. The Stock Exchange is by no means an infallible index of trade movements, but it has assumed to know a good deal about the iron trade and might be expected to catch the drift of the figures of pig iron production month by month. It was a surprise, therefore, to those who watch the fluctuations in output, from the standpoint of producer or consumer, to see that the blast furnace statistics of July 1, as collected by *The Iron Age*, were construed as unfavorable. The theory seems to be that the larger the output of pig iron the healthier iron trade conditions are, and when, from whatever cause, the output is cut down it is conclusive evidence that conditions are not so good. But that the falling off in production in June should have been made the basis of an attack on the steel stocks and should give encouragement to those who have taken the pessimistic side of Wall Street forecast is even more of a surprise when the causes of the relatively slight curtailment are known.

There was no falling off in the demand for pig iron in the month of June. In fact, the month was the most active of the year, and at its end the indications were better for a continuance of large buying in all iron and steel lines than at its beginning. As is well known, the furnace companies have been making every exertion in recent months to increase the output of pig iron and have only been prevented by the cumulative results of prosperity—the wearing of linings down to mere shells in many cases, with daily liability to the summary stoppage of operations. Prominent consumers of steel-making irons would have been larger buyers could the iron trade have been had, and in lieu of iron would have bought steel for their finishing mills, but steel was harder to get than pig iron.

The difference is great between the slight curtailment of pig iron production from the causes that have been operative for some months and those which in late 1903 and early 1904 led to the blowing out of dozens of stacks that were in excellent physical condition. Then the curtailment was a real badge of distress. The railroads had ceased to buy and the iron was not wanted. Even so, the blowing out of furnaces had a favorable significance, because it meant a shortening of the period of demoralization due to an unmanageable surplus. The furnace-men of the country who have had but a decade or two of experience can recall more than one instance in which a large pig iron production was anything but a sign of prosperity.

Record Exports and Imports of British Iron.

Emphasis is laid by the British trade press on the remarkable extent of the foreign iron and steel trade of Great Britain in the six months ending June 30, 1906. The total of imports was 721,199 tons, as against 632,854 tons in the corresponding period of 1905, and if this rate were continued to the end of the year it would give the largest year's record ever made. But even a greater increase over the first half of 1905 is shown in the total of iron and steel exports, which was 2,107,435 tons, against 1,739,166 tons. The value of exports of iron and steel and allied products, including machinery, was £44,334,019, an increase of £10,602,695, or about 30 per cent. over the figures for the first half of 1905. The principal

item of increase in exports is in pig iron and puddled iron—from 449,760 tons to 706,867—the extraordinary prosperity in Germany furnishing the principal outlet for accumulated pig iron stocks in the Cleveland district of England. The decline in rail exports, which has been the occasion of the complaint that the international rail agreement has been detrimental to British rail mills, is more than 25 per cent., or from 262,403 tons in the first half of 1905 to 191,909 tons in the first half of 1906. Tin plates fell off from 186,109 tons to 177,288 tons. The principal items of increase in the imports statements are represented by 307,153 tons of billets, ingots, &c., against 283,959 tons; 84,881 tons of structural steel against 53,928 tons, 55,449 tons of plates against 31,985 tons, 61,348 tons of wrought bars, &c., against 41,088 tons. The increases in billets and plates are chiefly due to larger exports from the United States.

While the official figures for June are not yet available the first six months of 1906 will **prove without doubt** to be similarly a record half year in the foreign trade of the United States in iron and steel. Imports have been much greater in other years, as in the boom of 1901 and 1902, but exports have been so heavy as to bring the two beyond any previous total. For the first five months of the year the exports of iron and steel products reported by tonnage amounted to 602,511 tons, or at an annual rate of well over 1,400,000 tons.

The Executive's Eight-Hour Order.

Much anxiety has been created among manufacturers, especially those having contractual relations with the Government, by publications in the daily press concerning the recent order by President Roosevelt with regard to the observance of the eight-hour day "on all Government work." The appearance of this order almost coincidently with a fulmination of the American Federation of Labor directed against all public men who have had the temerity to oppose the demands of the labor leaders for Congressional legislation has not only increased the feeling of uneasiness, but has afforded a text for a great deal of misrepresentation on the part of the daily press concerning the scope and effect of the new order.

It has been stated in many prominent newspapers that the President's order requiring a strict enforcement of the eight-hour law on Government work "will accomplish what the representatives of organized labor endeavored in vain to secure at the hands of Congress in the passage of the so-called eight-hour bill," urged by President Gompers of the American Federation of Labor. In other statements it has been made to appear that the President's order will affect the hours of labor in the plants of all manufacturers doing Government work, either as contractors or as subcontractors.

As a matter of fact the President's order applies only to labor performed on Government works, such as public buildings, river and harbor improvements, &c., located on land either owned by the Government or upon which the Government has an easement of some kind. In a general way it covers all navy yards, naval stations and the work of the executive departments, but this class of employment was not in the President's mind when the new order was drafted, as no charge has been made of any violation of the statute in these branches of Government service. Under the terms of the President's order all Government officers are required to see that the eight-hour law is strictly enforced, and these officials are required "to report at once to the heads of their respec-

tive departments any violation of the statute." Neither the President's order nor the instructions issued by department chiefs in pursuance thereof contemplate construing the law in its application to Government contract labor. The violations reported will be based upon the construction of the law by subordinate officials and will be laid before the Attorney-General before action is taken.

The law upon which the President's order is based was approved August 1, 1892, and in view of the widespread interest that has been aroused on the subject the full text thereof is herewith presented, as follows:

Be it enacted, &c., that the service and employment of all laborers and mechanics who are now or may hereinafter be employed by the Government of the United States, by the District of Columbia, or by any contractor or subcontractor upon any of the public works of the United States or of said District of Columbia, is hereby limited and restricted to eight hours in any one calendar day; and it shall be unlawful for any officer of the United States Government, or of the District of Columbia, or any such contractor or subcontractor, whose duty it shall be to employ, direct or control the services of such laborers and mechanics, to require or permit any such laborer or mechanic to work more than eight hours in any calendar day except in cases of extraordinary emergency.

Sec. 2. That any officer or agent of the Government of the United States or of the District of Columbia, or any contractor or subcontractor, whose duty it shall be to employ, direct, or control any laborer or mechanic employed upon any of the public works of the United States or of the District of Columbia, who shall intentionally violate any provision of this act shall be deemed guilty of a misdemeanor, and for each and every such offense, upon conviction, be punished by a fine not to exceed \$1000 or by imprisonment for not more than six months, or by both such fine and imprisonment, in the discretion of the court having jurisdiction thereof.

Sec. 3. That the provisions of this act shall not be so construed as to in any manner apply to or affect contractors or subcontractors or to limit the hours of daily service of laborers or mechanics engaged upon the public works of the United States or of the District of Columbia for which contracts have been entered into prior to the passage of this act.

It will be observed that the statute relates only to laborers and mechanics employed by the Government, or by contractors or subcontractors "upon any of the public works of the United States or of said District of Columbia." In construing this law, and incidentally in the settlement of other controversies, the courts have held that it does not apply to contractors or subcontractors manufacturing goods for the Government in their own plants. It has even been held that the title to a battleship does not pass to the Government until the vessel is finally accepted.

American Brass Tubing for Great Britain.—One of the mills in this country rolling seamless brass tubing was surprised recently to receive an order from an export house for 22,700 pounds of such tubing for British consumption. The *Metal Industry* says that "the American mill being extremely busy, could not handle the order, but appreciated the fact of business coming from abroad, particularly for tubing, which is generally supposed to cost less to manufacture in Great Britain than in the United States. The fact that the order came to America at all is explained by the difference in the custom of the rolling mills of the two countries. The American practice is to trim the tubing to certain sizes, smoothing off all of the rough edges and making no extra charge for this service, while in a British mill it is customary to charge extra for this work. The specifications also called for a good smooth tubing. That the American rolling mill products are holding their own in some of the British colonial markets is shown by the good business that the American mills are doing with Canada in spite of the preferential tariff, which favors British goods."

According to the report of the Committee on Electrolysis, made at the recent convention of the American Water Works Association at Boston, lawsuits brought by water departments and companies, on account of damages due to electrolysis, are still pending in various parts of the country.

PERSONAL.

Charles T. Arkins, mining expert attached to the Seattle office of the Allis-Chalmers Company, has had conferred upon him the title of consulting engineer to the Canadian Government. Mr. Arkins will act with the chief of the Geological Survey of Canada and the Government Mining Department in certain mineral investigations.

E. W. T. Gray, manager since 1898 of the New York sales office of the Westinghouse Electric & Mfg. Company, has resigned to take up commercial work in another field. W. C. Webster, his successor, entered the employ of the company in 1898 and has always been identified with the sales department.

J. S. Simcox has resigned the general management of the Kentucky Chain Company, Frankfort, Ky., to engage in the manufacture of chain on his own account at another point.

Elsworth M. Lee, formerly chief engineer of the Miller-Collins Company, New York, and George Hewitt, assistant engineer of the Passaic Steel Company, Paterson, N. J., have entered into partnership, under the firm name of Lee & Hewitt, and opened offices at 234 Fifth avenue, New York, to conduct a general consulting engineering practice. Both have had a wide experience in the designing of railroad and highway bridges, mill and factory buildings, and reinforced concrete construction.

David O. Holbrook, until recently vice-president of the Pennsylvania Malleable Company and the Central Car Wheel Company, Pittsburgh, has been elected vice-president of the Dayton Pneumatic Tool Company, Pittsburgh, Pa.

F. Du P. Thomson, consulting engineer, Buffalo, N. Y., formerly chief engineer of the Lackawanna Steel Company, has become engineer of the Wheeling Mold & Foundry Company, Wheeling, W. Va.

Frank B. Richards of M. A. Hanna & Co., Cleveland, has sailed for Europe for a month's trip.

J. T. W. Rudesill, heretofore general superintendent of the Missouri Malleable Iron Company, East St. Louis, Ill., has succeeded L. G. White as general manager of the Columbus Structural Steel Company, Columbus, Ohio.

Charles A. Moore, Jr., secretary of Manning, Maxwell & Moore, New York, and party, who recently started on a trip to Arabia, have arrived at Constantinople and were received by the Sultan at Yildiz Palace on Friday. The party will now proceed into the interior.

William Runkel, president of the Warren Foundry & Machine Company, New York, will sail for Europe on Friday.

Harry H. Graham has been appointed superintendent of the 48-in. mill of the Carnegie Steel Company, at Homestead, Pa.

O. P. Letchworth, president of the Pratt & Letchworth Company, Buffalo, N. Y., tendered a banquet at the Hotel Iroquois, July 19, to a number of manufacturers of malleable iron and steel castings. Some sixty persons were present. The following day Mr. Letchworth entertained the manufacturers at dinner at his summer home at Lewiston, on the Niagara River, and on this occasion was the recipient of a Tiffany lamp, presented by his associates in the trade. The lamp was suitably inscribed.

A. C. Morse has resigned as superintendent of the Shelby, Ohio, works of the Shelby Steel Tube Company, and on August 1 will become connected with the Seamless Tube Company of America at Monessen, Pa.

H. T. Whigham has been appointed manager of the London office of the United States Steel Products Export Company, succeeding Col. Millard Hunsiker, foreign manager, resigned. Mr. Whigham takes up his duties in London on August 1.

E. H. Sniffen, vice-president of the Westinghouse Machine Company, East Pittsburgh, has sailed for Europe, to be gone about two months.

OBITUARY.

JOHN G. LANNING.

John G. Lanning, who had long been connected with the steel business in the open hearth departments of various leading companies, was instantly killed in Boston by an elevator accident on July 18. He had been engaged in the manufacture of open hearth steel practically since its beginning in this country, having been employed in connection with one of the earliest successful installations of Siemens-Martin furnaces in the United States. These were located at the Norway Iron Works, at South Boston, and at this plant was manufactured the steel for the plates for the first vessels of the new navy.

Just prior to the great depression in the iron and steel business in 1893 Mr. Lanning operated open hearth plants at Birmingham and Fort Payne, Ala., where it is believed that the first open hearth steel manufactured in the South was made. The severe business depression that then came involved the Fort Payne plant with others that had been promoted and backed by New England capital and it was shut down. After this he was superintendent of the open hearth department at the Newburg Works, in Cleveland, Ohio, and left there to take charge of the plant at Clairton, Pa. Latterly, and up to recently, he had been superintendent of the open hearth department at the Lackawanna Steel Works, Buffalo. At the Clairton plant and Lackawanna plant he established records for output by plants of their capacity, which have been referred to in these columns. Outside of his record as an able manager in his line he was a practical designer, constructor and chemist in connection with his special department of metallurgical work.

He was the grandson of John S. Gustin (bearing his name), who was one of the pioneers in the development of the iron business of this country, and who, just prior to and at the time of the Civil War, was well known as a designer and builder of rolling mills, having generally designed and supervised the construction of the Norway Iron Works, at South Boston, as well as mills at Trenton, N. J.; Worcester, Mass.; Toronto, Canada, and other places.

Mr. Lanning had a large circle of friends and acquaintances at the various plants where he has been in charge, who will remember him not only as thoroughly competent in his special line but as a man of the highest type of honor and fidelity. He leaves a wife and two children.

JOHN STRICKLER NEWMYER.

John S. Newmyer, for some years general manager of the Washington Coal & Coke Company, died last week at his residence at Dawson, Pa., in the fifty-ninth year of his age. He was born in western Pennsylvania, was educated in the common schools and worked on the farm of his father until 1880. He was afterward associated with his father under the firm name of Newmyer & Son in the coal and coke business, operating the Cora mines, with a plant of 42 ovens. In 1892 this coal was exhausted and Mr. Newmyer took up a tract of 2000 acres and became one of the pioneer coke operators of the Lower Connellsville region. He first built 50 ovens and later developed the property into one of the most valuable in western Pennsylvania. In July, 1892, he had the Washington Coal & Coke Company chartered, the company beginning operations the following August.

Mr. Newmyer was elected general manager of the company and held that position until the time of his death, being a large stockholder and director. He was also stockholder, director and general manager of the Dawson Electric Power & Light Company; a director, stockholder and superintendent of the Washington Run Railroad Company; director and chairman of the Board of Managers of the Star Supply Company; stockholder and director in the Cochran Coal & Coke Company; director and large stockholder in the First National Bank of Dawson. Mr. Newmyer had a wide acquaintance in the business world, and his many friends will learn of his death with regret.

HENRY KLEIN, until recently superintendent of the Tudor Iron Dorks, East St. Louis, Ill., died at Youngs-

town, Ohio, July 17, aged 59 years. He had been identified with the iron and steel business for about 40 years. While in this business at Sharon, Pa., 25 years ago, he was elected a vice-president of the Amalgamated Association.

THEODORE F. PATTERSON died July 15, at Valley Forge, Pa., aged 62 years. He had been connected with the iron business in eastern Pennsylvania more or less all his adult life, starting in with the Phoenix Iron Company, after which he leased and operated for some years the old Safe Harbor Iron Works, in Lancaster County. Subsequently Mr. Patterson was superintendent of the tube works department of the Allison Mfg. Company, Philadelphia, and for a number of years superintendent of the Montour Works of the Reading Iron Company. In addition to the above he had numerous minor affiliations with the iron business.

The Founders' Convention November 14 and 15.

The Administrative Council of the National Founders' Association held its regular summer meeting at Detroit Wednesday and Thursday, July 18 and 19. It was decided to hold the convention of 1906 in New York City on Wednesday and Thursday, November 14 and 15. The usual meeting of the Administrative Council will be held on Monday and Tuesday of the same week, and the "alumni" dinner, which is attended by present and past officers of the association, on Tuesday evening.

A report was made at the Detroit meeting of the progress of the work on the Foundry Training School, under the auspices of the Winona Technical Institute, at Indianapolis. The movement, it was stated, had so far advanced that the time had arrived to hand over to the institute the sum of \$1000 voted by the annual convention of November, 1905, for the purpose of completing the equipment of the foundry.

A part of the session was devoted to a review of the situation in the various foundry centers in which strikes exist. With few exceptions these reports showed marked progress by the foundrymen in recruiting their forces and bringing their shops to an effective working basis. The reports indicated that one of the prominent developments of this strike would be a great increase in the using of the molding machine, together with large additions to the number of efficient molders. This result, it was agreed, would mean pronounced relief from the stringency that has existed in the foundry labor market, so far as the supply of competent men is concerned. It was believed that these results would be felt in the foundry trade for a long time.

The Syracuse Smelting Works, Thirty-sixth street and Tenth avenue, New York, has received from the United States Board of General Appraisers a decision on imported type metal, in which the company's protest against an assignment of duty by the New York collector of customs was sustained. The metal was classified as lead in pigs, under paragraph 182 of the tariff act, but was claimed to be dutiable as type metal, under paragraph 190. The company had imported a carload of this metal, and the Government chemist analyzed two of the pigs and gave the analysis 8.95 per cent. of antimony. As type metal must contain at least 9 per cent. of antimony, the classification was thus brought under lead. Average samples were then analyzed at the Ledoux Laboratory, and this analysis was verified by John C. Sparks, city analyst. These analyses showed that the type metal contained over 10 per cent. of antimony. Consequently the protest of the Syracuse Smelting Works was sustained and the lower rate of duty was decided upon.

The Welsh tinplate manufacturers are somewhat concerned over the developments in the American meat packing trade, so far as they affect the exports of canned packing house products. A great deal of Welsh tinplate goes into cans thus exported, the American manufacturers and exporters getting the benefit of the drawback in the duty paid.

NEWS OF THE WORKS.

Iron and Steel.

The Pennsylvania Swedish Iron Company has added two charcoal iron knobbling fires to its new forge at Cheswick, Pa., making a total of eight fires, with a daily capacity of 25 tons of blooms. The plant was operated steadily during the first half of this year, and prospects are good for a similar condition during the last half year. Sizes of blooms made vary from 4 x 4 to 8 x 8 in., 100 to 500 pounds in weight. The company does not manufacture any finished material, operations being confined to the manufacture of high grade blooms for special purposes, such as locomotive boiler tube skelp, sheet bar, tin bar and small blooms for staybolt iron, &c.

Fannie Furnace of the Cherry Valley Iron Company, at West Middlesex, Pa., has been blown out for relining and other extensive repairs. The stack will be idle for about two months.

The Shenango Furnace Company, Pittsburgh, of which W. P. Snyder is president, will build a new blast furnace at Sharpsville, Pa., where it now has four stacks. As soon as the new stack is ready work will start on the building of a second new stack. No contracts have yet been placed, but bids on the engines, buildings and other equipment will be asked for in a short time.

The William Tod Company, Youngstown, Ohio, is installing a modern blowing engine in the blast furnace of the Brier Hill Iron & Coal Company, at Youngstown. This stack is being relined and otherwise repaired and will be ready for blast again about September 1.

The Cumberland Steel Company, Cumberland, Md., held its annual meeting last week and elected the following officers and directors: Merwin McKaig, president; W. J. Muncaster, vice-president and general manager, and Albert Charles, secretary and treasurer; Robert Shriver, R. R. Henderson, William Pearre, William M. McKaig and A. H. Johnson. The annual report was satisfactory to all interested.

The American Rolling Mill Corporation, Chicago, has purchased a site, comprising about 254,000 sq. ft. of land, close to the entrance of the Drainage Canal into the Chicago River. The land fronts about 1100 ft. on Robey street and 1000 ft. on Canal D, with a depth of 254 ft. A modern iron rolling mill will be erected on this property, the preliminary plans providing for 8 and 16 in. mills, with puddling furnaces, which will also be installed.

The Andrews Steel Company, Newport, Ky., which was recently incorporated with a capital stock of \$500,000 and which is affiliated with the Licking Rolling Mill Company, has let contract for the construction of a 24-in. bar mill.

The Globe Wire Company, Sharpsburg, Pa., which manufactures needle wire and tool steel for drill rods, has purchased from the United States Foundry & Furnace Company 1½ acres on the river at New Kensington, Pa. Included in the purchase are buildings which will be occupied by the company as soon as the equipment can be removed from the present plant.

General Machinery.

The De La Vergne Machine Company, New York, is installing at the E. & G. Brooke Iron Company's plant, Birdsboro, Pa., refrigerating machinery of 350 tons capacity, to be used in drying the air blast for the furnaces on the Gayley system. Frank C. Roberts & Co., Philadelphia, Pa., are the engineers.

The Newton Machine Tool Works, Incorporated, Philadelphia, has elected new officers as follows: Harry W. Champion, president; William M. Graham, treasurer; Ellis J. Hannum, secretary. The election of new officers is occasioned by the recent death of Charles C. Newton, founder and president of the company, with whom the above named have been closely associated in executive positions for many years. No changes in the conduct of the business will be made.

The Boland & Gschwind plant at New Orleans, La., which was recently purchased by Nathan S. Stern, will be operated under the name of the Stern Foundry & Machinery Company. It is the intention to install quite a number of new machines, such as lathes, planers, steam hammers, drill presses, &c. The company will do general foundry and machine repair work.

The William Helser & Sons Company, which was recently incorporated, has taken over the well established business formerly carried on by William Helser, Buffalo, N. Y., and will continue the manufacture of manhole doors and fittings for use in breweries, toe stretcher rods for lasts, &c., machine repairing, blacksmithing and general jobbing work. William Helser is president; Albert G. Helser, vice-president, and George A. Helser, secretary and treasurer. The plant is fully equipped and no new machinery is required.

The work of constructing the new plant of the Standard Boiler & Plate Iron Company, at Niles, Ohio, is progressing rapidly, partial operations having been started the middle of last week. Work in full will be attained as the plant approaches completion.

The stockholders of the Solid Steel Tool & Forge Company, Tarentum, Pa., held their annual meeting on Monday, July 16,

and elected the following Board of Directors: H. M. Brackenridge, J. D. Wilson, J. W. Hemphill, J. H. Baker, J. E. McKelvey and R. Miller, Jr.

Wilber Emery, Oberlin, Ohio, is now manufacturing modern high speed barb wire machines.

The Du Bois, Pa., Iron Works will, on August 6, apply for a Pennsylvania charter. It will manufacture and repair machinery.

J. J. McCabe, New York, has issued a list of second-hand tools in stock, which constituted the equipment of two large plants just absorbed by him. The list covers 26, 32 and 42 in. Pond, 26-in. Pratt & Whitney, 30-in. Niles, 44-in. Hughes & Phillips, 48-in. Sellers, 56-in. Bement planers, eight engine lathes, ranging from 14 to 50 in. swing, of the Read, Flather, Blaisdell, Pond and Gleason makes; Ingersoll, Pratt & Whitney, Garvin and Brainard milling machines, both plain and universal; radial drills, 30-in. Gould & Eberhardt upright drills, upright boring mills, slotter, automatic gear cutter, and 10 to 26 in. shapers, of Hendee, Gould & Eberhardt and Cincinnati make.

The Traylor Engineering Company, New York, has received an order for hoisting, pumping and electrical machinery and steel and iron work for a complete hoisting and crushing plant for the Sierra Consolidated Gold Mining Company, Hillsboro, N. M. The current for operating the machinery will be generated by two 125-kw. generators, each direct connected to 170-hp. American Diesel oil engines. The other electrical equipment will include two 12½-kw. generators, five 30-hp. motors, one 15-hp. motor.

The Commercial Electric Company, Indianapolis, Ind., has been sold to the Fairbanks-Morse Electrical Mfg. Company, a new corporation, with \$150,000 capital stock, of which C. H. Morse of the Fairbanks-Morse Company is president. S. L. Hadley, who was secretary of the old company, will be manager, and Walter E. Miller, vice-president. The company, while not owned by the Fairbanks-Morse Company, manufacturer of scales and machinery, will be allied with that company. It is proposed to double the capacity of the plant.

The Parsons-Lane Company, recently incorporated, has succeeded the firm of Parsons & Lane, Sodus, N. Y., and will continue to operate the plant, which is well equipped for general machine work. The company will build machinery, specializing in thread milling, in which line it will cut blanks furnished to it or will furnish parts complete for all worms and coarse pitch screws, either standard or special threads. W. T. Gaylor is president; D. D. Kelly, vice-president; H. L. Kelly, secretary; A. H. Lane, treasurer, and W. N. Parsons, general manager.

Power Plant Equipment.

Erie City Iron Works, Erie, Pa., was awarded contract for 1000-hp. in boilers for the refinery of the Cunningham Sugar Company, at Sugarland, Texas.

The Oliver Iron & Steel Company, Pittsburgh, is installing a modern electric power plant, to contain two 100-kw. turbo generators, with provision for additions and equipped with condensers. The boilers are of the Babcock & Wilcox design and are fitted with mechanical stokers. All coal and ashes will be handled by conveyors. The building to contain this power plant will be of steel frame, brick and concrete construction. Pumps of the latest design for the economical pumping of water for the condensers and mill service will be installed. The power generated is to be used in the mills on the South Side, Pittsburgh.

A franchise has been granted to J. A. Grove and others of Bluffton, Ind., to establish a municipal steam heating plant there, the city reserving the right to purchase after five years.

The Westinghouse Machine Company, East Pittsburgh, has furnished a complete gas engine equipment to the University of Tokio, Japan. The company has also shipped to the Sotatsu Cotton Spring Company, Sotatsu, Japan, a power plant consisting of steam engines and electric generators.

The Pittsburgh Railways Company has contracted with the Westinghouse Electric & Mfg. Company for the installation of a number of electric machines to be added to the power house equipment at Brunot's Island, Pittsburgh. This new machinery consists of three 7500-hp. turbo generators and one 5000-hp. turbo generator, making a total increase to the plant of practically 30,000 hp., which will not only make that power plant one of the largest, but also one of the most complete and up to date electric power houses in the country.

The Harrisburg Foundry & Machine Works has taken orders for a 500-hp. four-valve engine for the light plant at Columbus, Miss. The company has also received the orders for the three 300-hp. compound four-valve engines for the power plant of the new Fairmount Hotel in San Francisco. It will build the engines for the Citizens' Light, Heat & Power Company at Montgomery, Ala.

The Pennsylvania & Maryland Street Railway Company has been incorporated to build a 30-mile line in Somerset County, Pa. There will be a large power station erected. C. H. Jennings, Jennings, Md., is the president. Congressman M. E. Lilly and George W. Klipp, Towanda, and D. H. Clark, Punxsutawney, Pa., are also heavily interested.

The Henry, Millard & Henry Company, York, Pa., manufacturer of gas and gasoline engines, has just completed an addition, 20 x 30 ft., to its shop, in which it is installing a planer and lathe. Later on it is the intention to build an addition, 77 x 125 ft.

Foundries.

At a meeting of the Sharon Foundry Company, Sharon, Pa., on July 20, W. W. Shilling was elected president and Thomas Kennedy secretary-treasurer. The Board of Directors was re-elected.

The brass foundry of the Kisiminetas Mfg. Company, at Avonmore, Pa., which was recently destroyed by fire, is being rebuilt near the plant of the West Penn Foundry & Machine Company.

The Standard Foundry & Steel Casting Company, which was recently incorporated at Pittsburgh with a capital stock of \$50,000, will erect a steel foundry near that city. The officers are: Arthur E. Pearce, president, and J. M. B. Hoff, treasurer. Both are identified with the Pittsburgh Steel Mfg. Company and the Pittsburgh Steel Supply Company.

Bridges and Buildings.

The Income Leasehold Company, St. Louis, Mo., is erecting a 17-story building, 96 x 268 ft. The Southern Illinois Construction Company, East St. Louis, Ill., has the general contract for the work, and the steel work, aggregating 4500 tons, has just been let to the Jones & Laughlin Steel Company, Pittsburgh.

The Converse Bridge Company, Chattanooga, Tenn., is opening a beam yard, 70 x 400 ft., and installing an electric crane, to run beams from the operating department as they are made, to it.

The largest single shipment that was ever sent out from the works of the Fort Pitt Bridge Company, Cannonsburg, Pa., was started on its way to Boston, Mass., last Saturday, consigned to the Boston Elevated Railway Company. The shipment consisted of 13 carloads of structural material and is a part of the \$1,000,000 order on which the Fort Pitt Company is working.

John R. Maho of San Francisco, Cal., and D. A. Mack of Bakersfield, Cal., have been in Pittsburgh for the past week arranging with local steel companies for the shipment of a large amount of structural steel to be used in the reconstruction of San Francisco.

The city of Harrisburg, Pa., is having preliminary plans made for a bridge about a quarter of a mile long, to span the railroads and some streets, connecting the central part of the city with the brow of Allison Hill. James H. Fuertes, New York, who is consulting engineer to the Board of Public Works of Harrisburg, has the work in charge.

Fires.

The mills of the Montana Zinc Company at Butte, Mont., were burned July 20. The loss is estimated at \$100,000.

The Eclipse Foundry Company's plant at Detroit, Mich., was recently destroyed by fire. The loss is placed at \$10,000.

The plant of the United States Leather Company at Prentice, Wis., was damaged \$200,000 by fire July 22.

The tapestry factory of F. Shumaker & Co., and the silk plant of Baker & Schofield, Paterson, N. J., were burned July 21. The loss is placed at \$40,000.

The main building of the Standard Chain Works, St. Marys, Ohio, was burned July 21. The loss is about \$40,000.

The large mill of the International Talc Company, near Toronto, Ont., was destroyed by fire last week, the loss being about \$100,000.

The factories of the Carlos Deckmeyer Box Company and the Heath & Milligan Paint Company, Chicago, Ill., were destroyed by fire July 3. The loss is about \$200,000.

The pump plant of Chas. G. Blatchley, Philadelphia, Pa., was badly damaged by fire on July 13.

On July 9 fire did \$2000 damage to the Canadian Corundum Wheel Company's works at Hamilton, Ont.

Hardware.

The Norton Sash Weight Company has been incorporated at Vincennes, Ind., with \$25,000 capital stock, to manufacture sash weights. The directors are Daniel W. Norton, John A. Cox and Edwin S. Shepherd.

The Banta-Bender Mfg. Company has been incorporated at Ligonier, Ind., with \$100,000 capital stock, to manufacture refrigerators, incubators, &c. The directors are L. A. Banta, Wm. H. Bender and John A. Hoffman.

The Perfection Tube Cleaner Company has been organized under Maine laws to manufacture a boiler tube cleaner, with factory at Portland, Maine. The officers are: President, Seth L. Larrabee, and treasurer, A. L. Lowell.

Willard S. Adams and William G. Staples of Westport, Conn., have purchased the interests of the firm of G. W. Bradley's Sons of that town, manufacturers of axes and edge tools. The old name will be retained by the new owners, who will continue the business on the old lines and as a partnership. The change in ownership went into effect May 1.

Announcement has been made of the formation of the Hercules Chain Company, Lebanon, Pa., to manufacture chain by machinery under a recently perfected process. The officers of the company are: B. Dawson Coleman, president; Quincy Bent, vice-president; Charles M. Bowman, secretary and treasurer; E. R. Coleman and Samuel E. Light being also interested. Messrs. Coleman and Bent are connected with the Pennsylvania Steel Company, Mr. Coleman being resident director and Mr. Bent superintendent of furnaces.

The Morgan Spring Company, Worcester, Mass., has just completed the building and equipment of a new japan department which will increase the capacity of this branch of manufacturing about 300 per cent.

The new plant of the Boston Pressed Metal Company, 171-173 Union street, Worcester, Mass., will be much larger than that occupied by its predecessor, the Eastern Stamping Company. An addition is being erected to the large building which will be occupied as soon as the necessary preparations are completed. The addition will be devoted to the annealing, hardening and forge departments. Altogether the company will have 15,000 sq. ft. of manufacturing space, and the building can be added to when the growth of the business makes it necessary. A spur track from the Boston & Maine Railroad permits the easy handling of freight. This will be especially desirable in handling fuel oil, which will be used in the forge and annealing room. A large tank near the railroad will be filled direct from the car. Heavier machinery than that employed in the past will be installed as soon as deliveries are made, which will permit the company to do large work. The company will manufacture a line of builders' hardware and various specialties will be developed. Charles Howard Weston is president of the company; Herbert A. Pike, treasurer, and George S. Davis, sales manager.

The Economy Mfg. Company, New Haven, Conn., has begun the erection of a manufacturing building to be 100 x 200 ft. and one story. It will be used for the manufacture of laundry tubs and concrete stone for the United States Military Academy at West Point.

The Shoe Hardware Company, Waterbury, Conn., is to erect large additions to its plant this season, including an addition to the factory proper, four stories in height; a new boiler room, two stories high, and an enlargement to the japan room.

The Alton Machine Company, Harrison, N. J., is putting on the market a high-speed 12-spool strander that is designed to operate at 1000 rev. per min. and is intended for use in the manufacture of hollow clothes line and other light stranding work where high speed and large output are demanded. The first machine is going to the Mallin Company of Cleveland, Ohio, who, it is understood, have placed orders with the Alton Machine Company for several more of these machines.

The Steele & Johnson Mfg. Company, Waterbury, Conn., is to erect a new factory building, 40 x 100 ft. and four stories, the work to be done this summer. The company manufactures brass goods.

Miscellaneous.

The Pioneer Steel Company, Rockford, Ill., has been incorporated with a capital stock of \$50,000. The incorporators are L. A. Weyburn, W. A. Clark and S. Valentine Saxby.

The H. Blackburn Mfg. Company, Evansville, Ind., has been incorporated with a capital stock of \$5000, to manufacture sanitary coil cleaning machines. The incorporators are Henry C. Stock, Geo. W. Herman and George H. Stockfleth.

The Cary Automatic Coupler Company, Chicago, has been incorporated with a capital stock of \$12,000, to manufacture automatic car and train pipe couplers. Officers of the company are B. R. Kozlowski, president and general manager; Lewis C. Cary, first vice-president; Edward D. Piper, second vice-president; B. Zaleski, treasurer, and J. P. Zaleski, secretary.

The Adams & Elting Company, Chicago, paint manufacturer, has in contemplation the construction of a large factory on South Forty-third and South Forty-fourth avenues, between Colorado avenue and the tracks of the Chicago Terminal Transfer Company. The plant may not be built until fall, and it is even possible that its construction will not be undertaken until spring. The contemplated structure will cost about \$150,000 and will be thoroughly modern.

The Acme-Keystone Mfg. Company has erected a plant at Beaver Falls, Pa., and will manufacture a new design of type-writer and blind stitch sewing machine. Peter J. McCool is identified with the company.

The Arkansas Soapstone & Refractories Mfg. Company, formed to acquire 320 acres of land in Saline County, Ark., containing extensive deposits of soapstone, magnesite, serpentine and quartz, announces that it will erect a soapstone plant at Pinnacle, near Little Rock, Ark. The deposits are found at an elevation of 400 ft. above Little Rock, on the divide of Hurricane and Fourche Creeks, and are between Hot Springs and Little Rock. The company is capitalized at \$300,000.

The White Sewing Machine Company, Cleveland, is making rapid progress in the completion of its new plant, which will be one of the largest of its kind in the country, and during the last week or two it has been buying quite a number of tools desired for early delivery.

The Iron and Metal Trades

Interest has centered in the past week in the remarkable business taken by the lake shipyards. Orders were placed for 11 boats for delivery at the opening of the navigation season in 1907, these including four 12,000-ton vessels for the United States Steel Corporation. In all 27 new boats have now been ordered for 1907 and the total on the books of the lake shipbuilders is 49. This means an addition of 9,000,000 to 10,000,000 tons a season to the carrying capacity of the Great Lakes. The danger repeatedly urged in the present campaign of vessel building, of an oversupply of lake tonnage, seems to have no terrors for large Ore consuming interests.

That midsummer buying of unprecedented proportions is in progress is indicated by the fact that the United States Steel Corporation has booked a distinctly larger average tonnage this month than in July, 1905, and that the daily average for this year thus far is much in excess of the daily average up to July 25, 1905. The orders are distributed through all lines in both light and heavy material.

The Pig Iron markets show an advancing tendency, and in the past week activity has been marked in Foundry grades in the West and in Basic Iron in the East. The leading harvester machinery interest bought 25,000 tons of Southern Iron to complete its requirements for the second half of the year. Following this transaction one important Southern seller withdrew from the market and other interests are now quite uniformly holding to the basis of \$13.50, Birmingham. Lower grades of Southern Iron have sold below this basis. On the buying of 40,000 tons of Basic Iron in eastern Pennsylvania the price for spot delivery advanced 25 cents. A round sale was made of Eastern Basic for delivery at Buffalo in the first half of 1907. One important Foundry Iron seller in the Chicago district is out of the market for the rest of the year.

Besides the business taken by Plate and Structural mills for the new lake boats, the week has seen the beginning of important contracts from Steel Car works. Bridges and buildings continue to be abundant sources of tonnage. Two St. Louis contracts, one a warehouse and the other an office building, call for 9400 tons. Pittsburgh reports 6000 tons of bridge work let, and a Cleveland tributary of the Lake Shore road has placed 9000 tons of bridge work.

Rail orders include 17,000 tons for the Reading road for 1906 delivery, and for 1907, 40,000 to 50,000 tons was booked. Foreign Rail orders amount to 20,000 to 25,000 tons for shipment to Japan, Yucatan, Cuba and South America.

The leading Wrought Pipe interest has booked the largest July business in its history, and the month even promises to establish a new record. Pipe line work, domestic and foreign, is heavy.

Western sales of Steel Bars, reported through Chicago, amount to 50,000 tons since July 1, and Bar Iron is more active in that market.

In Wire and Wire products, for a month ordinarily light, the activity of July has been surprising.

The situation in Steel, particularly Open Hearth, is more acute. A 5000-ton sale of Open Hearth Billets is reported in the East, for shipment to Pittsburgh.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	July 25, 1906.	July 17, 1906.	June 27, 1906.	July 26, 1905.
FIG IRON, Per Gross Ton:				
Foundry No. 2, Standard, Philadelphia	\$18.25	\$18.25	\$18.25	\$16.25
Foundry No. 2, Southern, Cincinnati	16.25	16.00	16.00	14.50
Foundry No. 2, Local, Chicago	18.50	18.25	18.00	16.25
Bessemer, Pittsburgh	18.60	18.60	18.35	14.85
Gray Forge, Pittsburgh	16.60	16.35	16.35	14.50
Lake Superior Charcoal, Chicago	19.25	19.00	19.00	16.50

BILLETS, RAILS, &c., Per

Gross Ton:				
Bessemer Billets, Pittsburgh	27.50	27.50	27.00	23.00
Forging Billets, Pittsburgh	33.00	33.00	33.00	25.00
Open Hearth Billets, Phila.	29.00	29.00	29.00	26.50
Wire Rods, Pittsburgh	34.00	34.00	34.00	32.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00

OLD MATERIAL, Per Gross Ton:

O Steel Rails, Chicago	14.00	14.00	14.00	14.00
O Steel Rails, Philadelphia	16.50	16.25	16.00	16.00
O Iron Rails, Chicago	21.25	21.25	21.25	18.75
O Iron Rails, Philadelphia	20.50	20.50	20.00	18.50
O Car Wheels, Chicago	18.00	18.00	18.00	14.75
O Car Wheels, Philadelphia	16.00	16.00	16.75	14.50
Heavy Steel Scrap, Pittsburgh	16.00	15.75	15.50	14.25
Heavy Steel Scrap, Chicago	13.00	13.50	13.00	13.50

FINISHED IRON AND STEEL,

Per Pound:				
Refined Iron Bars, Philadelphia	1.63½	1.63½	1.63½	1.63½
Common Iron Bars, Chicago	1.66½	1.66½	1.66½	1.50
Common Iron Bars, Pittsburgh	1.50	1.50	1.50	1.55
Steel Bars, Tidewater, New York	1.64½	1.64½	1.64½	1.64½
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.50
Tank Plates, Tidewater, New York	1.74½	1.74½	1.74½	1.74½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater, New York	1.84½	1.84½	1.84½	1.74½
Beams, Pittsburgh	1.70	1.70	1.70	1.60
Angles, Tidewater, New York	1.84½	1.84½	1.84½	1.74½
Angles, Pittsburgh	1.70	1.70	1.70	1.60
Skelp, Grooved Steel, Pittsburgh	1.57½	1.57½	1.57½	1.50
Skelp, Sheared Steel, Pittsburgh	1.60	1.60	1.60	1.55

SHEETS, NAILS AND WIRE,

Per Pound:				
Sheets, No. 27, Pittsburgh	2.40	2.40	2.40	2.20
Wire Nails, Pittsburgh	1.80	1.85	1.80	1.80
Cut Nails, Pittsburgh	1.75	1.75	1.75	1.80
Barb Wire, Galv., Pittsburgh	2.30	2.30	2.30	2.25
METALS, Per Pound:				
Copper, New York	28.50	18.37½	18.62½	15.12½
Spelter, St. Louis	5.90	5.85	5.97½	5.40
Lead, New York	5.80	5.75	5.87½	4.60
Lead, St. Louis	5.67½	5.70	5.82½	4.50
Tin, New York	37.25	36.25	38.75	32.90
Antimony, Hallett, New York	23.50	22.50	24.00	13.50
Nickel, New York	45.00	45.00	45.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	\$3.94	\$3.94	\$3.94	\$3.74

Chicago.

FISHER BUILDING, July 25, 1906.—(By Telegraph.)

Heavy purchases involving large tonnages of Pig Iron and Finished Material to meet consumers' future needs which have been recored during the week reflect the healthy conditions underlying the Iron and Steel trade, and the pressure on the mills for deliveries is indicative of a constantly increasing consumption. The Pig Iron situation both at Northern and Southern furnaces is stronger than at any time in the past three months, and the shortage of crude forms of Steel is acute. With the purchase of 25,000 tons of Southern Iron the International Harvester Company has finally covered its requirements through the last half, having contracted for a total of 50,000 tons of Foundry and Malleable Bessemer Iron during the past 30 days. Minor transactions have also been numerous, three merchant interests having disposed of 20,000 tons of Northern and Southern Foundry Iron in lots ranging from 500 to 3000 tons. One large Southern producer is temporarily out of the market, and will probably not re-enter until a higher basis prevails. Records at lake shipyards were broken last week when contracts were placed for 11 freighters to be placed in commission at the beginning of navigation next year. The Illinois Steel Company has already been awarded the Steel requirements for four of these boats, aggregating 16,000 tons of Plates and Shapes and additional tonnage is under negotiation. At St. Louis Steel awards for two large buildings amounting to 9400 tons were made to the Jones & Laughlin Steel Company, and the Structural work for rebuilding the surface line tunnels in this city aggregating 900 tons will be placed within a few days. The city of Chicago has placed contracts for 8500 tons of Cast Iron Pipe

for fall delivery, but bids on 2500 tons for Dayton, Ohio, were rejected. Local distributors have closed large contracts for Steel Bars for shipment through the last half, and other consumers that held off on account of the concessions to the implement trade are also buying freely. New tonnage for Wire products for the first three weeks of the month was twice as heavy as in the same period last year, and on account of the Rod shortage the production of stocks for the fall trade is greatly curtailed. Two idle Sheet mills—one in Wisconsin and the other in Indiana—are preparing to resume operations after an extended idleness on account of the favorable conditions prevailing in the Sheet trade, and the Indiana mill has already purchased 5000 tons of Sheet Bars at Youngstown. A local independent Steel interest, on account of the pressure on its finishing mills, is in the market for either Bessemer Iron or Steel Billets, but has been unable to secure the material for the deliveries required.

Pig Iron.—Unprecedented midsummer activity prevails in the Iron market, and sales during the week easily total 45,000 tons. The purchase of 25,000 tons by the International Harvester Company was made on an analysis basis at an average price of \$13, Birmingham, and on the bulk of the tonnage a minimum silicon content of 2 per cent. is specified, while the remainder is to have a minimum of $2\frac{1}{2}$ per cent. Following this sale concessions on Southern Iron were withdrawn, and the market is strong at \$13.50 for No. 2. The Sloss-Sheffield Steel & Iron Company has temporarily withdrawn quotations, in anticipation of higher prices on its unsold tonnage, and local furnaces made further advances and are asking \$18.75 for No. 2, Chicago. A shortage of Charcoal Iron is imminent, one interest having sold 40,000 tons since June 1 for delivery through the remainder of the year, and little unsold Iron is available. The Iroquois Iron Company has booked orders to its capacity and is out of the market for the balance of the year. The molders' strike has not curtailed consumption to any appreciable extent, and the pressure on the furnaces for prompt shipment is indicative of light foundry stocks. We quote as follows, f.o.b. Chicago:

Lake Superior Charcoal.....	\$19.25 to \$19.50
Northern Coke Foundry, No. 1.....	19.00 to 19.25
Northern Coke Foundry, No. 2.....	18.50 to 18.75
Northern Coke Foundry, No. 3.....	18.00 to 18.25
Northern Scotch, No. 1.....	19.25 to 19.50
Ohio Strong Softeners, No. 1.....	19.05 to 19.30
Ohio Strong Softeners, No. 2.....	18.55 to 18.80
Southern Coke, No. 1.....	17.90
Southern Coke, No. 2.....	17.40
Southern Coke, No. 3.....	16.90
Southern Coke, No. 4.....	16.40
Southern Coke, No. 1 Soft.....	17.90
Southern Coke, No. 2 Soft.....	17.40
Southern Gray Forge.....	16.15
Southern Mottled.....	15.65
Malleable Bessemer.....	18.50 to 18.80
Standard Bessemer.....	19.30 to 19.55
Jackson Co. and Kentucky Silvery.....	22.30 to 22.80

Cast Iron Pipe.—Contracts for 8500 tons of Cast Iron Pipe were awarded by the city of Chicago to the United States Cast Iron Pipe & Foundry Company and the J. K. Dimmick Company, the latter having secured 1000 tons of the total. The sizes range from 16 to 36 in. and deliveries are spread over the next three months. As the proposals failed to come within the appropriation, all bids on 2500 tons for Dayton, Ohio, were rejected. Prices are firm, as follows: Water Pipe, 4-in., \$32.50; 6, 8, 10 and 12 in., \$31.50; over 12-in., \$30.50, with \$1 extra for Gas Pipe.

(By Mail.)

Billets and Rods.—Steel shortage is acute, one of the largest Western Implement manufacturers operating its own Steel plant having come into the market during the week for a round tonnage to meet increased finishing mill requirements. The Illinois Steel Company is still out of the market on Rolling Billets, but is offering Forging and Axle Billets to the trade, the Western car builders now placing contracts for the latter for last half requirements. We also note the sale of 5000 tons of Sheet Bars to an Indiana Sheet mill, which will shortly resume operations. These will be furnished by an Eastern mill and deliveries extend through the last five months of the year. A shortage of Steel Rods still exists, the American Steel & Wire Company not producing enough tonnage to meet its own requirements. We quote Axle Billets at \$30 in large lots; Forging Billets \$35, and Bessemer and Open Hearth Rods, \$35 to \$36, f.o.b. Chicago.

Rails and Track Supplies.—The Carnegie Steel Company booked approximately 6300 tons of Standard Section Rails, for delivery during the first quarter of next year. The demand for Light Rails, notwithstanding the big tonnage that has already been placed with Western mills, is heavy, orders going largely to Eastern manufacturers. There is no abatement in the demand for Track Material for 1907 delivery. Quotations are unchanged, as follows: Angle Bars, accompanying Rail orders, 1906 delivery, 1.50c.; carload lots, 1.75c.; Spikes, 2.25c. to 2.35c.; Track Bolts, 2.65c. to 2.75c., base, Square Nuts, and 2.80c. to 2.90c., base, Hexagon Nuts. The store prices on Track supplies range from 15c. to 20c. above mill prices. Light Rails, 30 to 45 lb. sections, \$28 to \$29; 25-lb., \$30; 20-lb., \$30 to \$31; 16-lb., \$31 to \$32; 12-lb., \$32 to \$33, and lighter sections down to 8-lb., \$38 to

\$40, f.o.b. mill. Standard Sections are unchanged at \$28, f.o.b. mill, full freight to destination.

Structural Material.—The Illinois Steel Company this week booked orders for the shape requirements for four lake boats, aggregating 8000 tons, and others are pending. During the past week lake shipyards secured contracts for 11 large freighters, to be placed in commission next year, the Steel Corporation's Pittsburgh Steamship Company having placed orders for four. Building operations of magnitude continue to be undertaken in St. Louis, the Jones & Laughlin Steel Company having been awarded contracts during the past week for the new warehouse of Butler Brothers, requiring 4900 tons of Steel, and the new 17-story building of the Income Leasehold Company, 4500 tons. Quotations are unchanged, as follows: Beams and Channels, 3 to 15 in., inclusive, 1.86 $\frac{1}{2}$ c.; Angles, 3 to 6 in., $\frac{1}{4}$ -in. and heavier, 1.86 $\frac{1}{2}$ c.; larger than 6 in. on one or both legs, 1.96 $\frac{1}{2}$ c.; Beams, larger than 15 in., 1.96 $\frac{1}{2}$ c.; Zees, 3 in. and over, 1.86 $\frac{1}{2}$ c.; Tees, 3 in. and over, 1.91 $\frac{1}{2}$ c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending or other shopwork.

Plates.—The activity of lake shipyards has greatly strengthened the Plate situation and the outlook for the future is exceptionally bright. The Plates for four new vessels will be furnished by the Illinois Steel Company, amounting to 8000 tons. Specifications from other consumers have improved materially, and deliveries on sheared sizes cannot be made in less than thirty days, whereas during the month of June shipments could be made within a few days. We continue to quote: Tank Plates, $\frac{1}{4}$ -in. and heavier, wider than 6 $\frac{1}{4}$ and up to 100 in. wide, inclusive, car lots, Chicago, 1.76 $\frac{1}{2}$ c.; 3-16 in., 1.86 $\frac{1}{2}$ c.; Nos. 7 and 8 gauge, 1.91 $\frac{1}{2}$ c.; No. 9, 2.01 $\frac{1}{2}$ c.; Flange quality, in widths up to 100 in., 1.86 $\frac{1}{2}$ c., base, for $\frac{1}{4}$ -in. and heavier, with the same advance for lighter weights; Sketch Plates, Tank quality, 1.86 $\frac{1}{2}$ c.; Flange quality, 1.96 $\frac{1}{2}$ c. Store prices on Plates are as follows: Tank Plate, $\frac{1}{4}$ -in. and heavier, up to 72 in. wide, 2c. to 2.10c.; from 72 to 96 in. wide, 2.10c. to 2.20c.; 3-16 in. up to 60 in. wide, 2.10c. to 2.20c.; 72 in. wide, 2.35c. to 2.45c.; No. 8, up to 60 in. wide, 2.15c. to 2.25c.; Flange and Head quality, 0.25c. extra.

Sheets.—Two Western Sheet mills that have been idle for some time are now preparing to resume operations, one already having contracted for its Sheet Bar requirements through the remainder of the year. On account of the large tonnages already booked and the heavy specifications that are being daily received, deliveries on practically all sizes are deferred from 60 to 90 days, and in view of the high cost of raw material independent manufacturers are eager for an early advance. We quote as follows: Blue Annealed, No. 10, 1.91 $\frac{1}{2}$ c.; No. 12, 1.96 $\frac{1}{2}$ c.; No. 14, 2.01 $\frac{1}{2}$ c.; No. 16, 2.11 $\frac{1}{2}$ c.; Box Annealed, Nos. 17 to 21, 2.41 $\frac{1}{2}$ c.; Nos. 22 to 24, 2.46 $\frac{1}{2}$ c.; Nos. 25 and 26, 2.51 $\frac{1}{2}$ c.; No. 27, 2.56 $\frac{1}{2}$ c.; No. 28, 2.66 $\frac{1}{2}$ c.; No. 29, 2.81 $\frac{1}{2}$ c.; No. 30, 2.91 $\frac{1}{2}$ c. Galvanized Sheets, Nos. 10 to 14, 2.61 $\frac{1}{2}$ c.; Nos. 15 and 16, 2.81 $\frac{1}{2}$ c.; Nos. 17 to 21, 2.96 $\frac{1}{2}$ c.; Nos. 22 to 24, 3.11 $\frac{1}{2}$ c.; Nos. 25 and 26, 3.31 $\frac{1}{2}$ c.; No. 27, 3.51 $\frac{1}{2}$ c.; No. 28, 3.71 $\frac{1}{2}$ c.; No. 30, 4.21 $\frac{1}{2}$ c. Sheets from store: Blue Annealed, No. 12, 2.15c. to 2.25c.; No. 14, 2.20c. to 2.30c.; No. 16, 2.30c. to 2.40c.; Box Annealed, Nos. 18 to 20, 2.60c. to 2.70c.; Nos. 22 to 24, 2.65c. to 2.75c.; No. 26, 2.70c. to 2.80c.; No. 28, 2.85c. to 2.95c.; No. 30, 3.25c. to 3.35c. Galvanized from store: Nos. 10 to 20, 3.10c. to 3.20c.; Nos. 22 to 24, 3.35c. to 3.45c.; No. 26, 3.45c. to 3.55c.; No. 27, 3.55c. to 3.75c.; No. 28, 3.85c. to 3.95c.; No. 30, 4.45c. to 4.55c.

Bars.—Large contracts for Steel Bars were placed with Western distributors during the week, and the total business closed with the leading interest thus far this month approximates 50,000 tons. A distinct improvement is also noted in Iron Bars, and while no large contracts for future needs have been closed, the buying for current consumption is indicative of a shortage among consumers. Steel Bar specifications on contracts placed during April are exceptionally heavy, and the mills are already 30 days behind on deliveries. Quotations are firm and unchanged, as follows: Iron Bars, 1.66 $\frac{1}{2}$ c.; Steel Bars, 1.66 $\frac{1}{2}$ c., both half extras; Hoops, 2.06 $\frac{1}{2}$ c., extras as per Hoop card; Bands, 1.66 $\frac{1}{2}$ c., as per Steel card; Soft Steel Angles and Shapes, 1.66 $\frac{1}{2}$ c., half extras. Store prices are as follows: Bar Iron, 2.10c.; Steel Bars, 1.85c., and as high as 2c. is asked on certain scarce sizes; Steel Bands, 1.85c. to 1.90c., half extras; Soft Steel Hoops, 2.30c. to 2.40c., full extras.

Merchant Pipe.—The demand is seasonably heavy, distributors throughout the West and Northwest buying freely to meet current needs. In anticipation of the heavy fall trade some of the jobbers are beginning to lay in stocks, as the mills are gradually falling behind on shipments. Sales continue to be made on the basis of 81 and 5 off the list, Pittsburgh, and discounts in car lots, Chicago, are as follows: Black Steel Pipe, 79.35 per cent. on the base sizes, $\frac{1}{4}$ to 6 in., and Galvanized, 69.35 per cent. Iron Pipe is quoted from 1 $\frac{1}{2}$ to 2 points higher. From store in small lots Chicago jobbers are quoted 76 $\frac{1}{2}$ to 77 per cent. on Black Steel Pipe, $\frac{1}{4}$ to 6 in.

Boiler Tubes.—There is practically no change in the Boiler Tube situation, specifications continuing fairly heavy

and new tonnage light. Quotations, however, are maintained as follows on base sizes, 2 3/4 to 5 in., in car lots: Steel Tubes, 68.35; Iron, 55.35; Seamless, 50.35; 2 1/2 in. and smaller and lengths over 18 ft., and 2 1/2 in. and lengths over 22 ft., 10 per cent. extra. Store prices are unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1 1/2 in.....	40	35	42 1/2
1 1/2 to 2 1/4 in.....	50	35	35
2 1/4 in.....	52 1/2	35	30
2 1/2 to 5 in.....	60	47 1/2	42 1/2
6 in. and larger.....	50	35	..

Merchant Steel.—Some irregularities in the prices of Shafting are reported, concessions no doubt being offered by some interests to secure contracts for the heavy future requirements of Implement makers. Specifications on Agricultural Shapes are heavy and on new contracts the mills are unable to make deliveries in less than three or four months. Prices are unchanged, as follows: Planished or Smooth Finished Tire Steel, 1.86 1/2 c.; Iron Finish, up to 1 1/2 x 1/2 in., 1.81 1/2 c.; Iron Finish, 1 1/2 x 1/2 in. and larger, 1.66 1/2 c., base; Channels for solid rubber Tires, 3/4 to 1 in., 2.16 1/2 c., and 1 1/2 in. and larger, 2.06 1/2 c.; Smooth Finished Machinery Steel, 1.91 1/2 c.; Flat Sleigh Shoe, 1.71 1/2 c.; Concave and Convex Sleigh Shoe, 1.96 1/2 c.; Cutter Shoe, 2.35 c.; Toe Calk Steel, 2.21 1/2 c.; Railway Spring, 1.86 1/2 c.; Crucible Tool Steel, 6 1/2 c. to 8 c., and still higher prices are asked on special grades. Shafting, 50 per cent. off in car lots and 45 per cent. in less than car lots, in base territory.

Coke.—Local foundries are placing large contracts for their requirements, running through the last half of the year, at prices ranging from \$2.75 to \$2.85, for 72-hour Connells-ville Coke, at the ovens. By-product Coke on contracts is quoted at \$5.50 and in car lots, for prompt shipment, \$5.65 is asked.

Old Material.—This is still a dealers' market, consumers not being interested, except at concessions from the low basis already prevailing on practically all grades. Notwithstanding the low prices, railroad offerings show no falling off in tonnage, the Chicago, Milwaukee & St. Paul this week closing on a list of 1500 tons of material. To cover short sales dealers are offering slightly better prices than consumers are willing to pay, but the heavy stocks in the yards preclude the possibility of any early stiffening in values. We continue quotations on gross tons, car lots, f.o.b. Chicago, as follows:

Old Iron Rails.....	\$21.25 to \$21.50
Old Steel Rails, 4 ft. and over.....	15.50 to 16.00
Old Steel Rails, less than 4 ft.....	14.00 to 14.50
Heavy Relaying Rails, subject to inspection, 50 pounds and under.....	27.00 to 27.50
Old Car Wheels.....	18.00 to 18.50
Heavy Melting Steel Scrap.....	13.00 to 13.50
Frogs, Switches and Guards.....	13.50 to 14.00
Mixed Steel.....	11.00 to 11.50

The following quotations are per net ton:

Iron Fish Plates.....	\$16.00 to \$16.50
Iron Car Axles.....	22.00 to 22.50
Steel Car Axles.....	18.00 to 18.50
No. 1 Railroad Wrought.....	13.50 to 14.00
No. 2 Railroad Wrought.....	12.50 to 13.00
Railway Springs.....	13.00 to 13.50
Locomotive Tires, smooth.....	14.00 to 14.50
No. 1 Dealers' Forge.....	11.00 to 11.50
Mixed Bushing.....	9.00 to 9.25
Iron Axle Turnings.....	9.00 to 9.50
Soft Steel Axle Turnings.....	8.75 to 9.00
Machine Shop Turnings.....	8.75 to 9.00
Cast Borings.....	7.00 to 7.25
Mixed Borings, &c.....	7.00 to 7.50
No. 1 Mill.....	8.25 to 8.50
No. 2 Mill.....	7.50 to 8.00
No. 1 Boilers, cut to Sheets and Rings.....	9.00 to 9.50
No. 1 Cast Scrap.....	13.50 to 14.00
Stove Plate and Light Cast Scrap.....	11.00 to 11.50
Railroad Malleable.....	13.00 to 13.50
Agricultural Malleable.....	12.50 to 13.00

Metals.—The Lead market is quiet and quotations have slightly declined. Copper also is quiet, particularly as regards future business, but prices remain nominally at least unchanged. Most buyers are covered for some weeks and will not do any considerable purchasing before August and September. Spelter is fairly strong and Tin continues about as previously, with slight fluctuations up and down the scale of prices. We quote: Casting Copper, 18 3/4 c. to 18 1/2 c.; Lake, 18 1/2 c. to 19 1/4 c., in car lots; small lots, 1/4 c. to 3/4 c. higher; Pig Tin, car lots, 39 1/2 c. to 40 c.; small lots, 40 1/2 c. to 41 c.; Spelter, prompt delivery, 6.15 c. to 6.25 c., for car lots; Lead, Desilverized, 5.90 c. to 6 c., for 50-ton lots; Corroding, 6.57 1/2 c. to 6.67 1/2 c., for 50-ton lots; on car lots, 2 1/4 c. per 100 lb. higher; Cookson's Antimony, 28 c., and other grades, 26 c. to 27 c.; Sheet Zinc is \$7.75 list, f.o.b. Laselle, in car lots of 60-lb. casks. On Old Metals we quote: Copper Wire, 16 1/4 c.; Heavy Copper, 16 1/4 c.; Copper Bottoms, 15 1/2 c.; Copper Clips, 15 1/4 c.; Red Brass, 15 1/4 c.; Red Brass Borings, 13 1/4 c.; Yellow Brass, 12 1/4 c.; Yellow Brass Borings, 10 1/4 c.; Light Brass, 8 1/4 c.; Lead Pipe, 5 1/2 c.; Tea Lead, 5 c.; Zinc, 5 c.; Pewter, No. 1, 24 c.; Tin Foil, 32 c.; Block Tin Pipe, 27 1/2 c.

United States exports of copper have grown from a value of \$14,468,703 in 1895 to \$71,756,588 in 1905, or approximately 500 per cent. in the 11 years.

Pittsburgh.

PARK BUILDING, July 25, 1906.—(By Telegraph.)

Pig Iron.—The feature of the market the past week has been the increased demand for Foundry Iron. For the first time in some months a good deal of Southern Foundry Iron has been coming into the Pittsburgh district, this Iron having been sold on the basis of about \$13.50, Birmingham, for No. 2, equal to \$18.10, Pittsburgh. It was able to get into Pittsburgh on account of the scarcity of Northern brands. Northern makes of No. 2 Foundry are now firmly held at \$16.75 to \$17, Valley furnace, or \$17.60 to \$17.85, Pittsburgh. We note sales of about 2500 tons at these prices. Most sellers are now quoting \$17, and will not shade it. The Westinghouse Machine Company is in the market for 5000 tons or more of Foundry Iron, for delivery over the balance of this year, and wants a small tonnage for July shipment. There is not much doing in Bessemer Iron, no large inquiries being in the market; but if there were it is a question where the Iron could be found. Small lots of Bessemer for July and August delivery readily bring \$17.75 to \$18, Valley furnace. Basic Iron is also scarce and is held at \$17.50, Valley furnace. Forge Iron is in better demand and prices are slightly higher, Northern makes being now held at \$15.75 to \$16, Valley furnace, or \$16.60 to \$16.85, Pittsburgh. All indications now point to an actual shortage in the supply of Pig Iron and higher prices all along the line are predicted.

Steel.—There is still a great scarcity in the supply of Billets and Sheet and Tin Bars, and consumers who are not covered by contracts are compelled to pay fancy prices. Bessemer Billets for prompt delivery readily command \$27.50 to \$28, Pittsburgh, while Open Hearth Billets bring from \$28 to \$29. Official price on Sheet and Tin Bars is \$29, with freight to destination added. Forging Billets are held at about \$33, Pittsburgh, for prompt delivery.

(By Mail.)

The month of July has been regarded as the off month in the Iron trade, but this year is the exception that proves the rule, as this month has been one of the most active that the Iron trade has seen for a long time. The activity is not confined to one or two lines, but is general and is probably largely due to the scarcity of Steel-making Pig Irons and Steel. While the demand for Bessemer Pig Iron is not urgent, sellers who have any to spare for July and August shipment have no trouble in getting \$17.75 to \$18 for it. There is a scarcity of Basic Iron for early delivery, and most sellers are now asking \$17.50 at Valley furnace for it. Foundry Iron has also become scarce and has advanced sharply in price, Northern brands of No. 2 now being firmly held at \$16.75 to \$17 at Valley furnace, and actual sales have been made at the higher figure. The demand for Foundry Iron is heavier now than for some months, and the supply seems to be limited. A number of furnaces in the two valleys have gone out of blast for needed repairs, and this accounts largely for the scarcity. We also note a better inquiry for Forge Iron, and the tone of the market is firmer. It looks as though we would have an active Pig Iron market, at high prices, for the balance of this year. It is the same old story with the Steel market—not enough to go around and the finishing mills unable to run full, on account of the shortage. In Finished Iron and Steel, the tonnage being placed is larger than for some time, and the mills are behind in deliveries on nearly everything. Heavy orders for Steel Rails for 1907 delivery continue to be placed, and the tonnage entered by the mills for next year is very much larger than usual for so early in the year. Plates, Structural Steel, Sheets and Pipe are in heavy demand and the mills are sold up for months. Furnace and Foundry Coke of standard makes is scarce and bringing higher prices. The whole situation in the Iron trade is decidedly good and indicates great activity for the rest of this year. The Scrap market, which has been dull and neglected for some time, is showing some life and the tone is firmer.

Ferromanganese.—We note an active inquiry for Ferro for prompt delivery and also for balance of the year shipment, with sales of about 500 tons of foreign 80 per cent. Ferro for balance of the year delivery at \$80 to \$85, delivered, Pittsburgh. Ferro for spot shipment is bringing \$90 to \$95 a ton and is scarce at these prices.

Muck Bar.—The market is showing more activity and prices are firmer. Best grades of Muck Bar, made from all Pig Iron, are quoted at \$28.50 to \$29, Pittsburgh.

Wire Rods.—Prices continue firm, and there is a fairly active inquiry. We quote Bessemer and Open Hearth Rods at \$34 to \$34.50, Pittsburgh. Chain Rods are held at about \$35, Pittsburgh.

Skelp.—The market is firm, and buyers are specifying liberally on contracts. We quote: Grooved Steel Skelp, 1.57 1/2 c. to 1.60 c.; Sheared Steel Skelp, 1.60 c. to 1.65 c.; Grooved Iron Skelp, 1.65 c. to 1.70 c.; Sheared Iron Skelp, 1.75 c. to 1.80 c., Pittsburgh, these prices being for ordinary widths and gauges.

Structural Material.—Contracts for upward of 6000

tons of bridge work have been taken by local interests in the past week, and a good deal of similar work is pending and is about ready to close. There is a steady stream of small orders coming in, which aggregates considerable tonnage. The mills and the leading fabricators are filled up for the rest of this year, but work in some places is being greatly delayed on account of strikes. Prices continue very firm and we quote: Beams and Channels, up to 15-in., 1.70c.; over 15-in., 1.80c.; Angles, 3 x 2 x 1/4 in. thick up to 6 x 6 in., 1.70c.; 8 x 8 and 7 x 3 1/2 in., 1.80c.; Zees, 3-in. and larger, 1.70c.; Tees, 3-in. and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3-in. are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Plates.—Contracts for Plates for four or five large lake boats, aggregating 30,000 tons or more, have been placed recently, and the Plate mills are getting behind in deliveries, not promising deliveries on Sheared Plate under a month and on Universal Plates two months or longer. Orders for Plates from the Steel car interests are heavy, and the Plate mills seem assured of plenty of work for the rest of this year. Prices are firm, but on the narrow sizes, 6 1/4 in. up to 14 in., some of the mills are shading prices from \$1 to \$2 a ton. We quote: Tank Plates, 1/4 in. thick, 6 1/4 in. up to 100 in. in width, 1.60c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than 1/4-in. to and including 3-16-in.	
Plates on thin edge.....	\$0.10
Gauges Nos. 7 and 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 in.....	.05
Plates over 110 to 115 in.....	.10
Plates over 115 to 120 in.....	.15
Plates over 120 to 125 in.....	.25
Plates over 125 to 130 in.....	.50
Plates over 130 in.....	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 in.).....	.10
Complete Circles.....	.20
Roller and Flange Steel Plates.....	.10
"A. B. M. A." and ordinary Firebox Steel Plates.....	.20
Still Bottom Steel.....	.30
Marine Steel.....	.40
Shell Grade of Steel is abandoned.	

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within 10 days from date thereof, discount of 1/2 of 1 per cent. is allowable. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 in. wide down to 6 in. of Tank, Ship or Bridge quality.

Sheets.—The leading Sheet mills have their product sold up for the next three or four months, and the American Sheet & Tin Plate Company is understood to have its entire output sold for practically the rest of this year. It is said that in some cases premiums are being paid for spot shipments of Sheets. Prices are very firm, as follows: Nos. 10 and 12 gauge, 1.75c. to 1.80c.; Nos. 13 and 14, 1.85c.; Nos. 15 and 16, 2c.; Nos. 17 to 21, 2.25c.; Nos. 22 to 24, 2.30c.; Nos. 25 and 26, 2.35c.; No. 27, 2.40c.; No. 28, 2.50c.; No. 29, 2.65c., and No. 30, 2.75c. We quote Galvanized Sheets as follows: Nos. 10 and 11, 2.45c.; Nos. 12 and 14, 2.55c.; Nos. 15 and 16, 2.55c.; Nos. 17 to 21, 2.80c.; Nos. 22 and 24, 2.95c.; Nos. 25 and 26, 3.15c.; No. 27, 3.35c.; No. 28, 3.55c.; No. 29, 3.80c., and No. 30, 4.05c. We quote No. 28 Gauge Painted Roofing Sheets at \$1.75 per square, and Galvanized Roofing Sheets, No. 28 Gauge, at \$3.10 per square for 2-in. corrugations. These prices are for carload lots, jobbers charging the usual advances for small lots from store.

Iron and Steel Bars.—Heavy contracts for Steel Bars continue to be placed by large consumers, and the tonnage entered by the mills this month has been heavy. The demand for Iron Bars is also more active, and the mills are filled for several months. On Steel Bars some of the leading makers are not promising shipments inside of three months, and premiums are being paid for prompt shipment. We quote Iron and Steel Bars at 1.50c., base, half extras for carloads and larger lots.

Hoops and Bands.—A moderate amount of new business is being placed, but the mills are running largely on old contracts. We quote Steel Hoops at 1.90c. and Bands for all purposes at 1.50c., base, half extras, as per Standard Steel card. These prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery, an advance of \$2 a ton being charged for less than carloads.

Tin Plate.—New business in Tin Plate now being placed with the mills is light, but buyers are specifying liberally on contracts, and the leading mills have their output sold for the next three or four months. Shipments are much heavier than usual at this season of the year. There is still a scarcity of Steel, which is restricting output to some extent. We quote Tin Plate at \$3.75 per base box, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in 10 days, on which price a rebate of 5c. a box is allowed for carloads and larger lots.

Railroad Spikes.—We note a continued heavy demand, and the mills are much behind in deliveries. We quote Railroad Spikes at \$2.20 to \$2.25 per 100 lbs., f.o.b. Pittsburgh.

Merchant Steel.—Little new business is being placed, but the mills are busy on contracts on which buyers are specifying liberally, and shipments are heavy, July usually being a dull month in this trade. Prices are firm, as follows: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish, up to 1 1/2 x 1/2 in., 1.65c., and Iron Finish, 1 1/2 x 1/2 in. and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: 3/4, 7/8 and 1 in., 2c., and 1 1/8-in. and larger, 1.90c.; Toe Calk Steel, 2c. to 2.05c.; Railway Spring Steel, 1.75c. to 1.80c.; Cutter Shoes, 2.20c. to 2.25c.; Flat Sleigh Shoe, 1.50c. to 1.55c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. We quote Cold Rolled Shafting at 50 per cent. discount in carloads and 45 per cent. in less than carloads, delivered in base territory.

Spelter.—There is a little more inquiry, and the tone of the market is a shade firmer. We quote prime grades of Western at 5.82 1/2c., St. Louis, equal to 5.95c., Pittsburgh.

Merchant Pipe.—The 45 miles of 8-in. Line Pipe and 7 miles of 12-in., referred to in this report last week as having been placed for shipment to Indian Territory, were taken by the National Supply Company of this city. The Ohio Fuel Supply Company is in the market for a large tonnage of Line Pipe and will soon ask for prices. The mills are filled up on the larger sizes of Line Pipe for the next three or four months, and the demand for Merchant sizes is also heavy. The business of the National Tube Company this month will be the largest of any July in its history and possibly the largest of any month. Other mills report that they have all they can do and are far behind in shipments. As yet there are no indications that the present low prices, which have been in effect for a year, are to be advanced. The extreme discount on Merchant sizes of Steel Pipe remains at 81 and 5 per cent. off, to the large trade. Official discounts for carloads, which continue to be shaded one point or more, are as follows:

	Jobbers, carloads.			
	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
1/2 and 1/4 in.....	72	56	69	53
3/4 in.....	74	60	71	57
1/2 in.....	76	64	73	61
3/4 to 6 in.....	80	70	77 1/2	67 1/2
7 to 12 in.....	75	60	72 1/2	57
Extra strong, plain ends:				
1/2 to 3/4 in.....	65	53	62	50
1/2 to 4 in.....	72	60	69	57
1/2 to 8 in.....	68	56	65	53
Double extra strong, plain ends:				
1/2 to 8 in.....	61	50	58	47

Boiler Tubes.—The present demand for Boiler Tubes is only fair, the trade having bought heavily some time ago and being pretty well covered for the next month or two. Prices are fairly firm, but are some times shaded on certain sizes. Discounts in carloads are as follows:

	Iron.	Steel.
1 to 1 1/2 in.....	45	50
1 1/2 to 2 1/4 in.....	45	62
2 1/2 in.....	50	64
2 3/4 to 5 in.....	57	70
6 to 13 in.....	45	62

Iron and Steel Scrap.—The demand is showing some betterment and prices are a shade firmer. Heavy Steel Scrap is in urgent demand, on account of the scarcity and high prices of Bessemer and Basic Pig Iron, and is now quoted at \$16, Pittsburgh, per gross ton. Other grades of Scrap are quoted as follows: Bundled Sheet Scrap, \$13.75 to \$14; No. 1 Wrought Scrap, \$17.25 to \$17.50; Machinery Cast Scrap, \$15.50; Cast Iron Borings, \$8.25 to \$8.50; Old Steel Rails, short pieces, \$15.50 to \$15.75; Old Steel Rails, rerollers, \$17.25 to \$17.50; Axle Turnings, \$12.50; Stove Plate, \$10.25 to \$10.50; Wrought Turnings, \$11.50 to \$11.75—all in gross tons, f.o.b. Pittsburgh.

Coke.—In spite of the fact that a number of blast furnaces in the two valleys have gone out of blast for relining and repairs, thus decreasing the consumption of Coke, there is a decided scarcity of both Furnace and Foundry Coke of the best grades and prices are higher. We quote strictly Connellsville Furnace and Foundry Coke at \$2.65 to \$2.75, and 72-hour Foundry Coke at \$2.90 to \$3 a ton at oven. There is a decided scarcity of labor in the Connellsville region and this is having the effect of cutting down the output of Coke to some extent.

The steamer Powell Stackhouse with a cargo of 9700 tons of soft coal was unloaded recently at the docks of the Milwaukee Coke & Gas Company by two Brownhoist steam rigs equipped with 2 ton grab buckets in 39 hours actual working time, an average of 249 tons per hour, or 124 1/2 tons per hour per rig. The unloading of the entire cargo, including the cleaning up, was done by grab buckets, and for the first ten hours each machine averaged 160 tons per hour.

Philadelphia.

REAL ESTATE TRUST BUILDING, July 24, 1906.

The past week has confirmed the expectation of further improvement in the Iron and Steel markets. This is specially the case as regards Steel making Irons, sales of which amount to about 40,000 tons, with other lots under negotiation, which may be closed at almost any moment. Prices are a shade dearer, but there is no disposition to establish a higher range if it can be avoided. For nearly a year quotations have not varied more than 50 cents per ton, and it is believed that a steady business and uniform quotations will be more satisfactory than wild fluctuations, which usually mark the beginning of the end. At the moment prospects could hardly be more satisfactory than they are. There is all the business that can be handled; prices are fairly remunerative, and there is not the slightest sign of any falling off in the demand for an indefinite period. There appears to be an almost chronic fear of a scarcity of Pig Iron, but this is probably not well founded and is to some extent due to adroit manipulation by producers. They manage somehow to keep the mills in constant fear of shortage, yet in due time they all get enough to keep them running. It gives the impression, however, that consumers are working on a light margin and that they will do well to keep hammering away to get all the material that is properly coming to them. As far as regards consumption, everything is satisfactory. There may be a little gain in some lines and more is expected later, but it is not thought that there will be any great disparity between supply and demand, as they are very evenly balanced and one as liable to increase as the other. Sales, however, are likely to be larger than they have been. For the past two or three months buying was of a hand-to-mouth character, owing to uncertainties, which no longer exist. The return of confidence will therefore be signalized by purchases for forward delivery, and it is probable that consumers will now feel inclined to cover for the balance of the year. There appears to be no chance for lower prices, and when that is assured buying is usually of a liberal character, especially when prices are, as now, on a very reasonable basis.

Pig Iron.—Makers of Pig Iron never had better control of the market than they have at the present time; neither were they ever more conservative in regard to prices. They regard ruling quotations as fair to themselves as well as to consumers, and unless some great change occurs they will endeavor to hold them where they are. Consumers are almost equally well satisfied, although in some lines in which prices of the product are a little out of proportion they think Pig Iron is too high, but as a rule prevailing conditions are regarded as entirely satisfactory. Consumption has varied very little during the past six months, although if it was to be measured by the buying it might be supposed that there was a great falling off. Buying is nearly always more or less spasmodic. Sometimes consumers buy Iron enough to run them six or eight months; at other times they will take only small lots, although they may be consuming just as much as when they are buying heavily. The period of abstention has probably run its course, however, and while it may not indicate an immediate increase in consumption, it is quite likely that the next few weeks will see some heavy buying. The chances of lower prices are too small to have much weight; hence it is almost certain that consumers will cover their Pig Iron requirements for the remainder of the year. There is a great deal of inquiry, and while sellers are not running after business, there is little doubt that they will protect their regular trade at about to-day's prices. It may be noted that up to this date much less Iron has been sold than was the case last year at this time, so that while consumers will need the Iron producers will also need an outlet; hence it is not by any means a one-sided affair. It is a fairly proportioned proposition, and will doubtless tend to satisfactory sales and satisfactory prices. Basic Iron has been heavily bought—not less than 40,000 tons during the past few days—with negotiations under way which may carry the tonnage to a considerably larger tonnage. In other lines buying is on a more moderate scale, but is of the right character and may be the entering wedge for a great deal more business before the end of the month. Prices to-day are stronger than they have been for a long while, and are liable to be quoted higher next week than to-day's figures, which for Philadelphia and nearby deliveries are about as follows:

No. 1 X Foundry.....	\$19.00 to \$19.25
No. 2 X Foundry.....	18.25 to 18.75
No. 2 Plain.....	17.75 to 18.00
Standard Gray Forge.....	16.25 to 18.50
Ordinary Gray Forge.....	15.75 to 16.00
Basic.....	17.70 to 18.00
Low Phosphorus.....	24.50 to 24.75
Malleable.....	18.75 to 19.00
Bessemer.....	19.85 to 20.00
Lake Superior Charcoal.....	21.00 to 22.00

Steel.—There is a good demand for Open Hearth Billets, and at about \$29 for nearby deliveries some good sized lots have been taken. Mills are fully employed, with excellent prospects for the remainder of the year. Forging Billets are firm, at \$32 to \$33, according to delivery.

Steel Alloys.—Prices vary according to requirements as to date of deliveries. About \$80 to \$82.50 would be quoted for Ferro for the last quarter, or \$88 to \$90 for earlier dates. Spiegel is firm, at \$35 to \$36 asked.

Plates.—There is not much change in the Plate trade, which, however, is very satisfactory. Sheared Plates are not called for to the same extent as Universals, but the mills are turning out heavy tonnages, which are readily absorbed at unchanged prices, as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel.....	1.73½	1.78½
Flange or Boiler Steel.....	1.83½	1.88½
Marine.....	2.13½	2.18½
Locomotive Firebox Steel.....	2.23½	2.28½

The above are base prices for ¼-in. and heavier. The following extras apply.

	Extra per 100 pounds.
3-16-in. thick.....	\$0.10
Nos. 7 and 8, B. W. G.....	.15
No. 9, B. W. G.....	.25
Plates over 100 to 110 in.....	.05
Plates over 110 to 115 in.....	.10
Plates over 115 to 120 in.....	.15
Plates over 120 to 125 in.....	.25
Plates over 125 to 130 in.....	.50
Plates over 130 in.....	1.00

Structural Material.—Business is very active in this line and orders seem to be increasing, the mills having gained considerable business during the past week or two. Fairly good deliveries can be had for moderate sized lots, but the situation is undoubtedly stronger than it was a few weeks ago. Prices are unchanged, as follows: Beams, Angles and Channels, 1.83½c. to 2c., delivered.

Bars.—There is a better feeling all around, and while the volume of business is not much larger, all the indications favor increased activity in the near future. Consumption is large, and as stocks have been a good deal reduced new buying will naturally follow. Prices are steady, and with the increased cost of raw materials manufacturers will naturally look for better prices to recoup themselves. Meanwhile, 1.63½c. to 1.68½c. is quoted, for either Refined Iron Bars or for Soft Steel, but it will not take much to develop a slight advance.

Sheets.—The demand is very good and mills are running full at about the following prices: No. 13 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c., and No. 28, 2.80c.

Old Material.—The market is much stronger than it was a week ago, many sales having been made at advances of 25 to 75c. per ton. The feeling is a little unsettled, however, and as many of the mills are embargoed it is difficult to see how material can be shipped until mills can take it in. Most of the sales are for forward delivery, bids and offers for deliveries in buyers' yards being about as follows:

Scrap Steel Rails and Crops.....	\$16.50 to \$16.75
No. 1 Steel Scrap.....	16.25 to 16.50
Low Phosphorus Scrap.....	20.00 to 21.00
Old Steel Axles.....	20.00 to 20.50
Old Iron Axles.....	26.00 to 27.00
Old Iron Rails.....	20.50 to 21.50
Old Car Wheels.....	16.00 to 16.50
Choice Scrap, R. R. No. 1 Wrought.....	18.50 to 19.00
Choice No. 1 Yard Scrap.....	16.50 to 17.00
Long and Short.....	15.00 to 16.00
Machinery Scrap.....	15.50 to 16.00
Wrought Iron Pipe.....	13.50 to 13.75
No. 1 Forge Fire Scrap.....	13.00 to 13.25
No. 2 Light Ordinary.....	10.00 to 11.00
Wrought Turnings.....	11.75 to 12.25
Axle Turnings, Choice Heavy.....	12.50 to 13.00
Stove Plate.....	11.00 to 11.50
Cast Borings.....	9.75 to 10.25

Birmingham.

BIRMINGHAM, ALA., July 22, 1906.

Pig Iron.—There has been some improvement in sales during the past week and producers seem encouraged over the situation. While sales have been confined principally to small melters, it is understood that an agricultural implement concern has closed a deal which was pending last week for a large tonnage, the amount and price being refused for publication by the furnace company here. Slightly better prices, it is understood, are being obtained, though some producers are still quoting around \$13, while others who have booked pretty freely and can afford to remain out of the market for the time being have advanced to \$13.50 to \$13.75, and a few sales of small lots have gone at \$14 on No. 2 basis. One of the greatest difficulties confronting the producers at this time is the shortage of No. 2 Soft and No. 2 Foundry Iron, caused by the poor workings of the furnaces. This is not confined to any one particular concern, but is more or less true of every furnace in the district. So bad has it become that orders for these grades are taken very reluctantly, as unless a marked improvement is soon made delivery of this Iron will be considerably delayed on existing contracts. It is not to be expected that as good results will be obtained from the furnaces during the summer months as during the remainder of the year, but it is much worse at the present time than in former years. This, coupled with

the fact that operations at the foundries during the hot months have not been curtailed as usual, makes the situation confronting the melters of these grades a serious one, and one which will very probably affect the price. Labor conditions are far from satisfactory, and the possibility of the State refusing to continue leasing convicts for mine work at expiration of present leases, owing to the large percentage of deaths among those working in mines, makes the situation more serious than ever before. In a recent report made by the president of the State Convict Board he showed the death rate among convicts doing mine work was greatly in excess of that in other occupations in which this labor was used in the State, and recommended that steps looking to their removal from mines be taken.

Cast Iron Pipe.—Inquiries for shipment under 90 days are meeting with very little encouragement, and on some of the staple sizes longer time is required. The market continues exceedingly strong at about following prices for Water Pipe, f.o.b. cars foundry: 4 to 6 in., \$28; 8 to 12 in., \$27.50; over 12-in., \$26. Gas Pipe \$1 per ton extra.

Old Material.—Little activity is reported in the Scrap market, sales the past week having been confined to small lots of Cast and Steel. Dealers are looking forward to better prices within the next few weeks, and are seemingly content to carry the large stocks now in their yards rather than to make concessions in price. We quote dealers' prices, f.o.b. cars Birmingham, as follows:

Old Iron Rails	\$18.50 to \$19.00
Old Iron Axles	18.00 to 18.50
Old Steel Axles	18.00 to 17.00
Old Car Wheels	16.50 to 17.00
No. 1 Railroad Wrought	15.00 to 15.50
No. 2. Railroad Wrought	14.00 to 14.50
No. 1 Country Wrought	13.00 to 13.50
No. 2. Country Wrought	11.00 to 11.50
Wrought Pipe and Flues	11.50 to 12.00
Railroad Malleable	12.00 to 12.50
No. 1 Steel	11.00 to 11.50
No. 1 Machinery Cast	11.00 to 11.50
Stove Plate and Light Cast	8.50 to 9.00

All differences between the Commercial Coal Operators' Association and the United Mine Workers have been settled, and work has been resumed at all mines working union labor. The production of Coal for 1906 will probably far exceed that of any other year in the history of the State.

J. A. Topping, president of the Birmingham Southern Railroad, announces the appointment of the following officials, who will have charge of operation and traffic: F. H. Crockard, general manager; C. T. Kalbaugh, formerly with the Pittsburgh & Lake Erie Railroad, as train master at McKeesport, general superintendent; R. H. Moore of Pittsburgh, traffic manager; W. H. Johnson, assistant traffic manager; S. A. Cameron, auditor.

Cincinnati.

FIFTH AND MAIN STS., July 25, 1906.—(By Telegraph.)

Pig Iron.—The market the past week has manifested considerably more strength, and the situation appears to be growing better day by day. Inquiry is reported excellent and sales, especially along the line of smaller tonnage, are active. This appears to be the season when smaller consumers are much in evidence, and the impetus given to market conditions from this source is very healthful and satisfactory. It is said to be almost a matter of impossibility to find anything in the way of spot Iron in the Foundry grades, and growing less each week. Furnace conditions in the South are far from satisfactory, owing to the heavy rainfall that has greatly restricted the output. One of the large producers is said to have practically withdrawn from the market, so far as Foundry grades are concerned. To-day we are unable to discover any \$13 Iron that can be had, which may be construed in the light of a slight advance in price, and \$13.50 for No. 2 is to all appearances the figure that is taking more of the business offering, with \$13.25 done in several instances, where conditions were exceptionally desirable. Northern Irons are reported stronger than a week since and in fair demand, with quotations in some instances that appear to be almost prohibitory. We learn of an inquiry from a large Eastern melter for 5000 tons of Nos. 2 and 3 Foundry, covering third quarter. Freight rates from Hanging Rock district to Cincinnati are \$1.15, and from Birmingham, \$3. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1	\$16.75 to \$17.00
Southern Coke, No. 2	16.25 to 16.50
Southern Coke, No. 3	15.75 to 16.00
Southern Coke, No. 4	15.25 to 15.40
Southern Coke, No. 1 Soft	16.75 to 17.00
Southern Coke, No. 2 Soft	16.25 to 16.50
Southern Coke, Gray Forge	14.75 to 15.00
Southern Coke, Mottled	14.25 to 14.50
Ohio Silvery, No. 1 (8 per cent. Silicon)	21.65 to 22.15
Lake Superior Coke, No. 1	18.15 to 18.40
Lake Superior Coke, No. 2	17.65 to 17.90
Lake Superior Coke, No. 3	17.15 to 17.40

Car Wheel Irons.

Standard Southern Car Wheel	\$24.00 to \$24.25
Lake Superior Car Wheel	22.50 to 22.75

Coke.—The market is strong and prices rule firm. Con-

siderable contract business for the year is being taken care of. Prices are unchanged, the best foundry brands from Connellsville and Virginia regions being quotable from \$2.85 to \$3, f.o.b. ovens.

Finished Iron and Steel.—New business is coming forward in better shape than for several weeks since, and there is a firm tone apparent. The mills are said to be making good delivery on Structural Steel and are gradually catching up in orders. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.63c., with half extras; the same, in smaller lots, 2c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same, in small lots, 1.85c., with full extras; Base Angles, 1.83c., in carload lots; Beams and Channels, in carload lots, 1.83c.; Plates, 1/4-in. and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16 gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14 gauge, in carload lots, 2.05c.; in small lots, 2.60c.; Steel Tire, 1 x 1/4 in. or heavier, 1.83c., in carload lots.

Old Material.—The market is quiet and prices are somewhat erratic. We quote dealers' prices, f.o.b. Cincinnati, about as follows: No. 1 Railroad Wrought Scrap, \$14 to \$14.50 per net ton; Cast Borings, \$5 to \$6 per net ton; Steel Turnings, \$7 to \$8 per net ton; No. 1 Cast Scrap, \$12 to \$13 per net ton; Iron Rails, \$19 to \$20 per gross ton; Steel Rails, rolling mill lengths, \$14 to \$15 per gross ton; Relaying Rails, 56-lb. and upward, \$28 to \$29 per gross ton; Iron Axles, \$21 to \$22 per net ton; Car Wheels, \$17 to \$18 per gross ton; Low Phosphorus Scrap, \$18 to \$19 per gross ton.

Cleveland.

CLEVELAND, OHIO, July 24, 1906.

Iron Ore.—The shortage of high grade Ore is becoming acute. It is now apparent that the supply of Old Range Bessemer is much smaller than it was even a short time ago. The mines are not being worked as well as they might be, due to a shortage of labor. The result has been an active inquiry for these grades, with stiff premium prices offered. The vessel market is somewhat disturbed at present by the enormous increase in the lake tonnage available for the movement of Ore. It has been estimated that the vessels now under construction and recently ordered will, when afloat, increase the carrying capacity of the lake fleet by 10,000,000 tons for the season. Fears have been expressed by vesselmen that this will result in reducing the average rate of freight per ton. The new tonnage now coming out will be able to carry 3,000,000 tons this season. Ore shippers have little hope, however, of gaining any advantage from this cause, saying that the deficiencies of the movement this year will have to be made up next, while new furnace capacity and the necessity to move a larger percentage of low grade Ore to get the same results in Iron will make ample demands upon the fleet to keep all boats employed. Lake rates continue steady at 75c. from the head of the lakes to Ohio ports, 70c. from Marquette and 60c. from Escanaba.

Pig Iron.—At present the Foundry market in this territory is dull. There is a little buying, but it is scattering. One buyer took 1000 tons of No. 2 Foundry, others are taking small lots to piece out their needs for the remainder of the third quarter and some are buying small lots to run through the remainder of this year. Prices are about steady at \$16.75 to \$17, Valley furnace, for No. 2. In Basic and Bessemer the situation is still exceptionally strong, with a shortage apparently in prospect. Basic is holding firm at \$17, Valley furnace, but might be pushed higher if the furnaces were disposed to do so. Bessemer is selling at \$17.25 to \$17.50.

Coke.—The market is strong, with a demand not only for this year's delivery, but running through to July 1 next year. The bottom price of 72-hour Foundry Coke seems to be \$3, while Furnace Coke is strong at \$2.60 at oven.

Finished Iron and Steel.—One of the shipbuilding companies in this territory has just placed a contract with a Pittsburgh mill for 20,000 tons of Steel Plates as a result of the recent buying of ships. This mill was but recently offering deliveries in two to three weeks, but it is now filled up for 60 to 90 days. The market has in consequence strengthened, and there is a better demand on Eastern Plate mills. The ordering of new ships during the past week was phenomenal. One Toledo company obtained two orders, a company in Cleveland five and a Detroit yard four, making 11 new ships ordered in one week. Orders have thus been placed for an aggregate of 27 new ships for 1907 delivery, of which 17 came to the Cleveland company, 6 to the Detroit company and 4 to Toledo. Orders have also been placed for one large passenger steamer and four smaller boats to be used for wrecking purposes, all to be built of Steel. In addition to those there are at the present time under construction on the lakes, some of them partially completed, 17 boats, all of them large lake freighters. Of these 12 are being constructed by a Cleveland company, 3 by Detroit and 2 by Toledo. In all, therefore, there are under construc-

tion and ordered on the lakes 49 boats of various sizes, all but four of which are over 500 ft. in length. The average amount of Steel required for the hulls of these boats is over 3500 tons, some of them running over 4000 tons. Many of them are being built for various Steel making companies who furnish the Steel for the boats. A case in point was in the orders of last week, where four of the boats were for the Pittsburgh Steamship Company, the lake end of the United States Steel Corporation. The demand for Structural Steel is strong, and the mills are pretty badly congested as a result of the heavy demand for ship material coming with that from the general trade. Billets are still scarce, the strongest demand being for Forging Billets, which are selling at \$34 to \$35 in Cleveland. The Bar Iron market is strong with a good demand, and prices are stiff, inclining to an advance. The market is nominally 1.50c., Pittsburgh, but it would be hard to get much under 1.60c. Bar Steel is strong at 1.50c., Pittsburgh, most of the business being in specifications against contracts. Sheets are unchanged, new business being largely out of stock. The following are quotations to the trade, f.o.b. Cleveland: No. 10 Blue Annealed, 2.15c.; No. 28 One Pass Cold Rolled, 2.85c.; No. 28 Galvanized, 3.80c.

Old Material.—Some of the mills are beginning to buy a little more freely. The indications point to a somewhat better market. Prices have not changed much. The following are dealers' prices to the trade, f.o.b. Cleveland, gross tons: Old Steel Rails, \$15; Old Iron Rails (nominal), \$21 to \$22; Iron Car Axles (nominal), \$18.50 to \$19.50; Heavy Melting Steel, \$15. Net tons: Cast Borings, \$8; No. 1 Busheling, \$12.50 to \$13; No. 1 Railroad Wrought, \$15.50 to \$16; No. 1 Cast, \$14.50; Iron and Steel Turnings and Drillings, \$9.50 to \$10.50.

The German Iron Market.

BERLIN, July 12, 1906.

The situation in the German Iron industry grows stronger from week to week. All market reports bristle with evidence of this. The usual summer slackening in the rate of work has failed to appear this year, and on all sides there is a mad rush to keep up with orders. The refusal to take new orders is growing more common, and manufacturers are demanding longer periods of delivery than hitherto, many even refusing altogether to obligate themselves to deliver goods at any specified time.

The price situation is everywhere described as firm. Recent increases of 1 mark per metric hundredweight on Bars and 2 marks on Black Sheets were announced from Upper Silesia. Yesterday the Heavy Plate mills of Essen, Duisburg and Mülheim on the Ruhr announced an immediate advance of 5 marks on Boiler Plate, bringing the price up to 155 marks per ton, and 10 marks on Tubes, which makes the new price 350 marks per ton. Notwithstanding the fact that the price of these goods has risen sharply of late, the mills are fully employed and they require about six weeks for filling new orders. Among the members of the Düsseldorf Pig Iron Syndicate a further marking up of prices is favored, because higher prices will soon have to be paid for Coal and Coke. Among Upper Silesian furnacemen, too, higher prices for Pig are regarded as a certainty. It is rumored that the Steel Verband will mark up half rolled goods 5 marks next week.

The Scarcity of Pig Iron,

mentioned in previous letters, has grown still more pronounced within the past few weeks. Imports of English Pig to make up the deficiency of home supplies are increasing, June having shown a gain of about 10,000 tons over May imports. The Düsseldorf Syndicate has disposed of about all the Iron that its members can turn out by the end of the year, and inquiries for next year's consumption are coming in. The dearth of Pig has been made all the more intense through the circumstance that a number of the great mixed works of the Rhenish-Westphalian region are now consuming the entire output of their furnaces and have nothing left over for the syndicate. A week ago it was announced that the Bochum Gusstahl-Verein and Gute-Hoffnungshütte declared their inability to supply the syndicate with any pig during the first half of 1907, and later the Krupp Works made a similar declaration. It is further reported that the Dortmund Union, the Hoesch Works at Dortmund and the Hörder Bergwerks und Hüttenverein of that region are all in a similar position.

The capacity of blast furnaces cannot at present be fully utilized, owing to the scarcity of Coke. Although the country is producing much more Furnace Coke than ever before, it is not enough to meet the demands of smelters. It is a significant fact that the Phönix Company, near Ruhrort, one of the largest Iron companies of the lower Rhenish region, is unable to blow in two furnaces recently completed, owing to the scarcity of Coke and Ores.

The renewal of the Pig Iron Syndicate has tended to give greater strength to the market, especially in view of the price arrangement with the Kraft Works at Stettin and the new Lübeck Furnace Company. The syndicate has declared

sale of Foundry No. 3 open for the entire year 1907, for delivery outside the immediate Rhenish-Westphalian district.

The Steel Trade Active.

A comparatively new phenomenon in the trade is the growing scarcity of half rolled Steel. The consumption of such goods has been very heavy for many months, but the works were able, up to three or four months ago, to supply the home market fully and have considerable quantities of material left over for the foreign market. Since then the Steel Verband has curtailed its foreign engagements more and more, and has been compelled to give its attention more than ever to supplying home requirements. These latter have, however, swollen to such dimensions that the verband now has contracts far beyond the capacity of the member concerns. According to a trustworthy source the engagements of the verband are fully 20 per cent. above the producing capacity of the works.

The demand for Structural Material remains quite heavy, building operations going on everywhere at a brisk pace. Shipments to San Francisco, already made or under contract, have not, however, come up to expectations. It is said, in fact, that the orders for that city are of rather limited volume. Work on Steel Rails and other railroad supplies remains exceedingly active. The foreign demand for Rails is increasing, and there is no let-up in the home demand. The uncommon activity in mining operations at home and abroad creates an extremely strong market for Rails for mine tramways. The association of mills manufacturing Shipbuilding Steel has distributed among its members orders that will keep them busy for months. The market for Old Iron, which showed a drooping tendency several months ago, has undergone great improvement, so that prices are now 6 or 7 marks above the lowest prices touched in the spring.

The association of German machine tool factories has given out a report on the business situation during the June quarter, which says that employment at the various shops was generally better, in many cases much better, than in the March quarter. Several establishments speak of their business as being of extraordinary dimensions. Skilled labor, however, is scarce and wages have steadily risen.

The proposal to renew the Steel Verband for one year from its expiration, June 30, 1907, has now been withdrawn, as it did not meet with much favor, and efforts will be made to prolong the organization for five or ten years. The proposal in question was based upon the wish to avoid all troublesome discussions of organization matters at a time when business is so satisfactory. The effort to reorganize the Wire Nail Association on a wider basis have completely broken down, owing to the exaggerated allotment demands put in by some of the works. Discussion is now going on with a view to continuing the old organization in about the same form as hitherto, but no result has yet been reached.

Conditions in the Coal trade remain much the same as a fortnight ago. The scarcity of supplies has not been relieved, although the output during the past three weeks was somewhat greater than previously. The State railroads gave out some months ago heavy contracts for freight cars and locomotives, but it is seriously doubted whether delivery will be made early enough and in sufficient numbers to prevent a car famine of unheard of proportions.

New York.

NEW YORK, July 25, 1906.

Pig Iron.—Considerable purchases of Basic Iron for eastern Pennsylvania delivery have been the feature of the week, about 25,000 tons having been taken by three buyers at prices ranging from \$17.70 to \$17.90, where spot delivery was called for. On deliveries running forward from two to four months \$17.50, delivered, was done on large lots. The largest transaction in Southern Iron was 5000 tons, deliveries in third and fourth quarters, the price being based on \$13.50, Birmingham. A number of transactions in Foundry Iron are reported in 500 and 1000 ton lots, and more eastern Pennsylvania furnaces are asking \$17.75 at furnace for No. 2 than was the case a week ago. The market for Forge Iron is irregular, prices depending on the brand. Buying for puddling mills is only moderate. We quote tide-water deliveries as follows: Northern Pig, No. 1, \$18.50 to \$19; No. 2, \$18 to \$18.50; No. 2 Plain, \$17.25 to \$17.75. Southern Iron is sold at \$18.25 to \$18.50 for No. 1, and at \$17.25 to \$17.50 for No. 2, with a \$4 freight from Birmingham.

Steel Rails.—For 1907 delivery some fairly good tonnage has been booked recently not heretofore reported. The Chicago, Burlington & Quincy took 10,000 tons, the Chicago & Eastern Illinois 5000 tons, the Pittsburgh & Lake Erie 9500 tons, the Lehigh Valley 5000 tons (making its total 12,500 tons), the Brinson Railway 3000 tons, besides miscellaneous business amounting to 10,000 tons. For 1906 delivery the largest contract reported is that of the Philadelphia & Reading for 17,000 tons. Trolley lines and frog and switch works took 13,000 tons.

Structural Material.—No diminution appears in the amount of Structural business pending, and considerable lettings are expected within the next few weeks. In the past week the American Bridge Company has closed a number of bridge contracts, including about half of the 9000 tons required for five bridges for the Cleveland Short Line Railway Company, a Cleveland, Ohio, subsidiary of the Lake Shore. Among bridge contracts pending for the territory tributary to New York are two Scherzer lift bridges, 1500 tons, for the New York, New Haven & Hartford, to be built at Pelham Park, New York. The Bridge Department of New York City is also negotiating for a similar bridge at Pelham Park, which will require about 500 tons of Steel. The Long Island Railroad is also asking for bids on a new lift bridge. In addition to the 14,000 tons which will be required very soon for the City Investment Company's Cortlandt street building, New York business soon to be placed includes 1500 tons of Steel for the addition the Metropolitan Life Insurance Company will make to its building at 1 Madison avenue, and the trustees of Columbia University will require 400 tons of Steel for a new dormitory for Barnard College, at Broadway and 120th street. The New York Central will buy Steel in the near future for a number of bridges, and the extensions to the original plans for the Grand Central terminal construction will call for a large tonnage. A hotel building at Dallas, Texas, 1000 tons, will be erected by the American Bridge Company, and in the past week this company has also entered the bridge contract of the Chicago, St. Paul, Minneapolis & Omaha for 475 tons. In connection with the railroad construction in the Philippines, in charge of J. G. White & Co., this city, some bridge construction will soon come upon the market. The formal calling off of the strike of the Housemiths' and Bridgemen's Union will make conditions somewhat easier on several New York building contracts. However, for the past few months employers have been finding less and less difficulty in prosecuting their work. The Structural mills are steadily entering new contracts, these for the most part extending over the remainder of 1906. We quote on mill shipments, tidewater delivery, as follows: Beams, Channels, Angles and Zees, 1.84½¢; Tees, 1.89½¢; Bulb Angles and Deck Beams, 1.99½¢. On Beams 18 to 24 in. the extra is 0.10¢, and on Angles over 6 in., 0.10¢. Beams and Channels out of stock are sold at 2½¢.

Bars.—The demand for Iron and Steel Bars is increasing, while the supply of the former is still curtailed by the strike prevailing among a number of the Eastern mills. The consumers who usually draw their supplies from the idle mills are, of course, compelled to seek other makers, and the business thus consolidated is filling the order books of the latter, and has also caused Bar Iron prices to be very firmly established at the official quotation of 1.50¢, Pittsburgh, or 1.64¢, tidewater. The Eastern manufacturers held a conference on Thursday in this city and decided to reaffirm prices. The status of the strike has shown some slight changes. One of the mills has weakened, making concessions to its striking operatives, while a mill at Wilmington, Del., which has been steadily at work during the strike, was closed on Tuesday of last week by its men going out. Mill shipments of Steel Bars are firmly held at 1.64½¢, tidewater.

Plates.—The local demand shows little improvement in Sheared Plates, business continuing excellent in Universal Plates. Prices are firmly held, as follows, for tidewater delivery: Sheared Tank Plates, 1.74½¢ to 1.84½¢; Flange Plates, 1.84½¢ to 1.94½¢; Marine Plates, 2.14½¢ to 2.24½¢; Fire Box Plates, 2.24½¢ to 2.60¢, according to specifications.

Cast Iron Pipe.—The city of Philadelphia will open bids August 8 for part of its requirements for large Pipe. Specifications are out covering about 2300 tons of 48-in. and 6100 tons of 60-in., which, together with specials, will bring the total up to about 8600 tons. The total quantity wanted is about 40,000 tons, but it has evidently been deemed advisable to call for bids on only a portion of this lot. Inquiries from the general trade are heavy, some of them calling for good sized quantities. As the foundries are almost completely filled to December, it is now regarded as likely that contracts will lap over into next year, and that hardly an intermission in activity will be experienced until the regular season of 1907 opens. Carload lots of 6-in. continue to be nominally quoted at \$31 to \$32, but it is seldom that a foundry is able to take even a small order for delivery short of three months.

Old Material.—Rolling mills are again purchasing stock and Wrought Scrap is therefore more active. Cast Scrap is even stronger than it has been, with buyers in the market for large quantities, while stocks continue exceedingly small. Good sales of Steel Scrap have been made, and large inquiries are being received. The only unfavorable feature of the market is the fact that some of the Eastern Steel works are again embargoed. Prices are almost invariably higher than those quoted last week. Quotations for New York and vicinity are approximately as follows:

Old Iron Rails.....	\$20.50 to \$21.00
Relaying Rails.....	25.50 to 26.00
Old Steel Rails, rerolling lengths.....	16.00 to 16.50
Old Steel Rails, short pieces.....	15.00 to 15.50
Heavy Melting Steel Scrap.....	15.00 to 15.50
Standard Hammered Iron Car Axles.....	25.00 to 26.00
Old Steel Car Axles.....	19.50 to 20.00
No. 1 Railroad Wrought.....	18.00 to 18.50
Iron Track Scrap.....	16.00 to 16.50
No. 1 Yard Wrought, long.....	16.50 to 17.00
No. 1 Yard Wrought, short.....	15.00 to 15.50
Wrought Pipe.....	12.50 to 13.00
Light Iron.....	9.50 to 10.00
Cast Borings.....	8.75 to 9.25
Wrought Turnings.....	11.25 to 11.75
Old Car Wheels.....	16.50 to 17.50
No. 1 Machinery Cast.....	15.75 to 16.25
Stove Plate.....	10.75 to 11.25
Grate Bars.....	9.75 to 10.25
Malleable Cast.....	15.50 to 16.00

Metal Market.

NEW YORK, July 25, 1906.

Pig Tin.—Prices have steadily advanced, but trade has been light. On Thursday sales were made at 36.50¢, and on Friday the market advanced to 36.80¢. On Monday, in response to higher prices from London, 37.05¢ was asked, and on Tuesday sales were made at 37.45¢. These higher prices were, perhaps, made for window dressing purposes to influence the Banca sale in Holland to-day, which consisted of about 1600 tons, and went at an average of 105¼ florins, equivalent to 38.62½¢, c.i.f. New York. Apparently this feeling prevailed in London, for the market declined £1 on the afternoon cable to £170 5s. for spot and £169 15s. for futures. Three lots were sold on the exchange to-day at 37.25¢, 37.20¢ and 37.15¢, respectively; other sales have been made at 37.25¢. The statistical position continues to favor consumers; the arrival so far this month being 3003 tons, and there are afloat for American ports 1282 tons.

Lead.—Spot Lead can be obtained in this market at 5.80¢, although there is said to be foreign Lead available at 5.75¢; this price, however, shows little or no profit above the import cost. At least one sale of imported Lead during the week is reported at 5.77½¢. The St. Louis market is quoted at 5.67½¢ to 5.70¢. The London market is firmer at £16 15s. The American Smelting & Refining Company continues to quote 5.75¢ for shipment Lead in 50-ton lots. Sales are being made only at prices ruling on date of shipment, the above prices governing existing contracts. There is a feeling in the trade that this market is soon to be more active.

Spelter.—The inquiry has not improved; still, those conversant with the situation are confident that there will be more activity in the early fall. Carload lots of Prime Western can be had at 6.05¢ to 6.10¢, and Brass Mill Spelter is quoted at 6.20¢. In St. Louis 5.90¢ is asked. The London market is firmer at £27.

Copper.—There is a better domestic demand and more inquiry from Europe. Prices have advanced, and a fair range for Lake would be 18.50¢ to 18.75¢, although a well-known brand is held at 18.87½¢, and another brand of high grade Lake can only be had at 18.75¢. The United Metal Sellings Company is said to be quoting 18.50¢, delivered 30 days, for all deliveries of Electrolytic, and is making no concessions for large lots. There are other small lots of Electrolytic for sale at lower prices, and 18.25¢ to 18.50¢ covers the general range. For cask lots of Prime Lake 19¢ is asked, other brands being obtainable at 18.75¢ to 18.87½¢. For the same sized lots of Electrolytic 18.75¢ to 18.87½¢ is asked. The renewed demand seems to come from all classes of consumers, the jobbing trade having felt the stimulus too. In Europe some good round lots have been disposed of, but at concessions from the prices quoted above. The London market had a sharp advance to-day, spot being sold at £82 10s. and futures at £81 5s. Best Selected is held at £86 5s. The exports so far this month aggregate 12,533 tons.

Antimony.—The holders of metal in this country have advanced their quotations. Hallett's is now quoted at 23½¢ to 24¢. Cookson's is scarce and a bid for 24½¢ for a 5-ton lot was refused this week.

Aluminum.—Prices are unchanged, No. 1 Ingots being held at 36¢, No. 2 Ingots at 34¢ per lb. Some headway is being made in the matter of clearing up old contracts, and it is expected that the principal producer will be in better shape to meet the demands in a few months.

Quicksilver.—The market is steady and unchanged. Lots of 100 flasks of 75-lb. each are unchanged at \$41 per flask. Small lots can be had at \$41.50 to \$42 per flask.

Nickel.—Large consumers are able to satisfy their requirements at 45¢ to 50¢; smaller quantities can be obtained at 55¢ to 65¢.

Tin Plates.—There appears to be a little better business in Tin Plates, but, as frequently stated, the larger consumers covered their requirements when prices were 15¢ to 25¢ per box lower. In New York 14 x 20 IC Coke Plates are held

at \$3.94, and in Pittsburgh at \$3.75, subject to the usual trade discounts. In Swansea prices are unchanged at 12s. 7½d.

Old Metals.—There is a steady trade, with no pressure to sell and no anxiety to buy. On a firm offer the following dealers' selling prices might be shaded:

	Cents.
Copper, Heavy Cut and Crucible.....	17.75 to 17.87½
Copper, Heavy and Wire.....	17.50 to 17.75
Copper, Light and Bottoms.....	15.75 to 16.00
Brass, Heavy.....	12.00 to 12.25
Brass, Light.....	9.75 to 10.00
Heavy Machinery Composition.....	15.75 to 16.00
Clean Brass Turnings.....	11.00 to 11.25
Composition Turnings.....	13.50 to 13.75
Aluminum Scrap.....	26.00 to 28.00
Lead, Heavy.....	5.25 to 5.40
Tin Lead.....	5.10 to 5.25
Zinc Scrap.....	4.40 to 4.60

Iron and Industrial Stocks.

NEW YORK, July 25, 1906.

The stock market continued to improve for the greater part of the week following our last report. The disquieting news from Russia, which upset European exchanges, had little effect here. On some days transactions in iron and steel stocks were fairly heavy, and prices appreciated considerably. Speculation in the United States Steel stocks was stimulated by reports that the earnings for the last quarter, which will be made public next Tuesday, would make a better showing than ever before in the history of the corporation. The range of active stocks from Thursday of last week to Tuesday of this week, inclusive, was as follows: Car & Foundry common 33¾ to 35¼; Locomotive common 69¾ to 70¾; Colorado Fuel 47 to 50½; Pressed Steel common 44¼ to 47¾; Railway Spring common 49 to 50½; Republic common 24¾ to 26½, preferred 94 to 96½; Sloss-Sheffield common 70 to 72½; Tennessee Coal 145 to 151¼; Cast Iron Pipe common 45½ to 47¾; United States Steel common 33¾ to 36¾, preferred 101 to 104; Can preferred 51½ to 54. Last transactions on active stocks up to 1.30 p.m. today are reported at the following prices: Can common 6½, preferred 53½; Car & Foundry common 35¾, preferred 100¾; Locomotive common 70¾, preferred 114½; Steel Foundries common 10½, preferred 42; Colorado Fuel 49¾; Pressed Steel common 46½, preferred 97¾; Railway Spring common 50¾; Republic common 26¼, preferred 97; Sloss-Sheffield common 72; Tennessee Coal 152¼; United States Cast Iron Pipe common 47; United States Steel common 36, preferred 103¾.

Dividends.—Cambria Steel Company has declared the regular semiannual dividend of 1½ per cent., payable August 15.

Bethlehem Steel Company has declared a quarterly dividend of 1¼ per cent., on the preferred stock, payable August 1.

The Standard Sanitary Mfg. Company, Pittsburgh, has declared the regular quarterly dividends of 1 per cent. on the common stock and 1¼ per cent. on the preferred.

A Premium Calculator.—A machine for calculating all the data connected with the paying of shop hands where the premium system is employed has been brought out by John Davis & Son, Limited, All Saints, West Derby, England. The machine can also be used for solving proportions and for estimating percentages. It consists of two wheels about 17 in. in diameter, mounted on a horizontal shaft, one of the wheels being keyed to the shaft and the other free to turn upon it. The loose wheel is pressed toward the other by an adjustable spring, to cause both wheels to tend to revolve together when either is rotated. On the face of each wheel is a celluloid scale approximately 4½ ft. long, which is divided into readings corresponding to units of money or time, or both. Only one setting is required for each determination. The machine is small, easily manipulated and is claimed to dispense with reference to tables and to be a great time saver.

Puddled Iron in Great Britain in 1905.—The total output of puddled bars in the United Kingdom in 1905, as ascertained by the British Iron Trade Association, was 938,558 gross tons, as compared with 936,228 tons in 1904 and 950,393 tons in 1903. The output in Scotland increased 27,590 tons and that in South Staffordshire increased 13,502 tons, these being the two principal producing districts. The output of finished iron and steel at the mills making puddled bars was 1,116,850 tons in 1905, against 977,091 tons in 1904. This increase over the total of puddled bars is due to the importation from other districts or from other countries of blooms and billets. The number of puddling furnaces in the United

Kingdom in 1905 was 1261, which were in operation some part or all of the year, and 272, which were not in use, a total of 1533, against a total of 1470 in 1904.

The Canadian Tariff.

TORONTO, July 21, 1906.—It will be recalled that the session of the Canadian Parliament, which closed last week, was the one to which the Finance Minister had allocated the revision of the tariff. An accident befalling him early in the session he announced that it would be impossible for him to prepare the bill in time for action within six months, so voluminous was the material collected in the travels of the Tariff Commission. Without the tariff Parliament had enough to keep it busy for more than four months. It is to meet in November to deal with the tariff, in what might almost be called a special session. At all events, if the tariff business were not to be disposed of, Parliament would remain prorogued until February or perhaps March.

Though its enactment is thus a matter belonging to a time a few months in the future the measure is practically all but stereotyped. Mr. Fielding and his colleagues have been working upon it every spare moment since the commission ended its peregrinations, and the bill is said to be in a very forward state. In a Parliament where the Government's majority is so large the passage of a Cabinet measure is a foregone conclusion, and it is safe to say that except in some details Mr. Fielding's tariff bill will be adopted in almost its present shape, whatever that is. Conjecture is busy as to its broad features. It would not be surprising if the present surtax on German goods were made less inflexible. It seems to be expected that the bill will give Germany an opportunity to come to a commercial understanding, whereby Canada's staples will be no longer discriminated against in German markets and German goods will be admitted into the Canadian market at the general rate.

Another guess is that the tariff bill will have a special aspect toward the United States, leaving an opening for a reciprocity agreement. With reference to the bearing of the tariff on British interests the opinion is ventured that instead of a horizontal cut of 33.1-3 per cent. in favor of British goods there will be a list of British goods to be admitted at preferential rates. There is a probability that the antidumping clause may be relinquished. As a short way to the ends that have been attained by the surtax, the preference and the antidumping duties, and to conduce to an equalization of tariffs as between Canada and the United States, the Government may make rather a stiff maximum rate, from which concessions will be allowed to this nation or that in consideration of favorable treatment to Canadian goods. That the tariff will be revised downward is improbable. The Government gave an indication of its drift when it adopted the rail duty and the antidumping clause. Its expenditure is growing fast and it must have all the revenue the tariff now yields.

C. A. C. J.

A paper somewhat unique among those usually presented to professional societies was that entitled "The Art of Inventing," read by Edwin J. Prindle at the recent meeting of the American Institute of Electrical Engineers at Milwaukee, Wis. The subject, naturally rather abstract, could only be treated by generalities, but the author, being a patent attorney as well as an engineer, was peculiarly qualified to handle it. The main theme of the paper was an encouraging support of the contention that an inventor is not necessarily one by birth, but that the inventive faculty is dormant in a great many who need only a proper application of effort to develop it. To illustrate the process of reasoning by which an invention is often evolved, the author traces the plausible steps that might have been followed by the inventor in the case of two specific inventions, showing that often a radical result is arrived at by comparatively easy stages. The author is a partner in the law firm of Prindle & Williamson, with offices in Washington and New York City, and is in charge of the New York branch. The paper has been reprinted for distribution to those interested.

The Production of Coke in 1905.

The report on the production of coke in 1905, by Edward W. Parker, statistician of the United States Geological Survey, which is now in course of preparation, will show that the output for 1905 exceeded that of all other years in the history of the industry. Not only was the output greater, but the percentage of increase in production over that of previous years was larger. The quantity of coke manufactured in the United States in 1905 was 32,231,129 net tons, as compared with 23,661,106 tons in 1904, indicating an increase of 8,570,023 tons, or 36.22 per cent. The value increased in still greater ratio, from \$46,144,941 in 1904 to \$72,476,196 in 1905, a gain of 57.06 per cent. This proportionate increase in the value of the coke production appears to have been induced by an extraordinary but legitimate demand created by the unprecedented production of pig iron in nearly every iron making district. As a result of this the average price per ton advanced from \$1.95 in 1904 to \$2.25 in 1905.

This great activity in the coking centers was further illustrated by the marked increase in the number of ovens. In 1905 there were 519 coke-making establishments, which owned 87,564 ovens, against 507, owning 83,599 ovens, in 1904.

Of the 87,564 ovens in the United States in 1905, the by-product ovens numbered 3159, or 3.61 per cent., and the total quantity of coke made in these ovens was 3,462,348 tons, or 10.74 per cent. There were 4751 ovens under construction at the close of 1905, of which 417 were of the retort by-product type. The by-product ovens in operation during 1905 were distributed as follows:

States.	Number.	States.	Number.
Alabama	280	New York	399
Illinois	120	Ohio	130
Maryland	200	Pennsylvania	1089
Massachusetts	400	Virginia	56
Michigan	135	West Virginia	120
Missouri	50	Wisconsin	80
New Jersey	100		

Pennsylvania is credited with a total production in 1905 of 20,573,736 tons, or 64 per cent. of the total, with an increase over 1904 of 5,712,672 tons. West Virginia, the second State in producing importance, contributed 3,400,593 tons, or 10.5 per cent. of the total, and is credited with 1,117,507 tons of the increase. Alabama's production increased from 2,340,219 tons in 1904 to 2,576,786 tons in 1905, a gain of 236,767 tons. Alabama's production in 1905 was equal to 8 per cent. of the total for the United States. Virginia's production, most of which was from the more recently developed districts in Wise County, increased from 1,101,716 to 1,499,481 tons, while the combined output of Colorado and Utah increased from 789,060 to 1,378,824 tons, a gain of 589,764 tons, or 74.74 per cent.

There were only four States in which the coke production in 1905 did not exceed that of the previous year. These four States, all of which have a comparatively unimportant output, were Georgia, Kansas, Missouri and Montana.

In the great Connellsville district of Pennsylvania, where more than one-third of the total coke production of the United States is obtained, the output of coke increased from 8,883,220 to 11,365,077 tons, the average price per ton at oven advancing from \$1.58 to \$1.96. The Lower Connellsville, or Klondike District, shows a gain from 2,887,456 tons in 1904 to 3,871,310 tons in 1905. The Flat Top District in Virginia and West Virginia, which is the principal coke producing center outside of Pennsylvania, shows an increase of 50 per cent. in the output, from 1,427,689 tons in 1904 to 2,169,589 tons in 1905.

The Waukesha Sheet Mills Sold.—The Berger Mfg. Company, Canton, Ohio, has purchased the plant of the Waukesha Sheet Steel & Iron Company, Waukesha, Wis. The product of the plant is sheets and bars and the equipment consists of six hot mills, a bar mill and two puddling furnaces. The company was organized several years ago, but disagreements arose among the stockholders and the plant was finally taken over by F. L. Fernley of Chicago, who now sells it to the Berger Company. The Canton Board of Trade is making an effort to induce the Berger Company to remove the plant to Canton, and sim-

ilar propositions have been made by Mt. Vernon and Niles, Ohio. Waukesha is anxious to retain it, and no action toward removal will be taken until a proposition from that town has been decided upon.

Recent Customs Decisions.

Black Sheets.

It has been decided by the Board of Appraisers that common or black sheet steel, pickled, thinner than No. 25 and not thicker than No. 32, is properly dutiable at the rate of $1\frac{1}{10}$ cents per pound and $\frac{2}{10}$ cent per pound additional. The steel in question is valued at not more than 3 cents per pound and was claimed to be dutiable at only $1\frac{1}{10}$ cents per pound. In overruling the contention of the importers, General Appraiser Fischer says in part: "While an examination of the sample admitted in evidence and the testimony taken at the hearing do not support the finding of the local appraiser that the sheets are pickled, the testimony of the importers' witnesses and the affidavit of the manufacturer offered by them show that the sheets are cold rolled. This being so, they are specifically provided for at the rates and under the paragraphs as assessed by the collector. His decision is affirmed in each case and the protests are overruled."

Old Submarine Cables.

General Appraiser Fischer has written a decision for the Board of Appraisers, upholding the claim of the Postal Telegraph Cable Company, New York, regarding the classification of old submarine cables made of copper wire, gutta percha, iron wire and jute yarn. Duty was assessed at the rate of $1\frac{1}{4}$ cents per pound, under the provisions of paragraph 137, as articles made from No. 12 iron wire. On the other hand, the importing company maintained that the assessment should be at 35 per cent, under the provision in the law for manufactures of gutta percha. The board finds that the gutta percha insulation largely exceeds the wire in value and is the component material of chief value in the cable. On this finding the protest is sustained.

A Decision Regarding Valuations.

In a decision by Judge Hay, the Board of Appraisers has decided that collectors of customs have no legal right to change the values of imported merchandise unless the goods have been subjected to a reappraisal at the hands of a single general appraiser, or of a board of three general appraisers. The specific case passed upon by the customs tribunal stood in the name of N. De Luccia & Co., New York. It appears from the testimony in the case that the collector was not satisfied with the invoice values of the merchandise imported by the firm and demanded duty on a higher basis. In sustaining the contention of the firm, the board holds that, while a collector has the power to change the classification of merchandise at his pleasure, he is not authorized to do so in the case of values. "If, after liquidation," says Judge Hay, "the collector becomes possessed of information which convinces him that the merchandise is appraised too low, he may direct appraisement, but without reappraisal he cannot change the value upon reliquidation."

The American Engineers Abroad.

The joint meeting of members of the American Institute of Mining Engineers and of the Iron and Steel Institute was opened at the Institution of Civil Engineers, London, on Tuesday, according to programme. The American engineers were welcomed by the president, R. A. Hadfield, and council of the Iron and Steel Institute, and addresses were delivered by the president and Sir James Kitson, past-president. A selection of papers was read and discussed. In the afternoon there were three alternative visits: (1) To the National Physical Laboratory at Teddington, (2) to the London County Council's Electricity Generating Station at Greenwich, and (3) to the Hall of the Worshipful Company of Armourers and Braisers, Coleman street. In the evening the Lord Mayor and Lady Mayoress gave the delegates a reception at the Mansion House. The meeting continues until Thursday, and will be followed by two days of visits and excursions.

Labor Notes.

The Housesmiths and Bridgemen's Union of New York City, of which Sam Parks was once the leader, held a meeting Monday night, July 23, and decided to return to work unconditionally. A seven months' strike is thus ended. It is stated that 2000 men have been out of work, but it is known that a considerable number of these have scattered to other cities, while union workers from other cities have accepted work in New York under the open shop rule of the Allied Iron Trades. President Frank M. Ryan of the International Association of Bridge and Structural Iron Workers, who addressed the meeting on Monday night, told the men that whatever mistakes the union had made could be rectified and that possibly at a more opportune time they might strike again and win. The strike started over a demand for an increase from \$4.50 a day to \$4.80 and a shorter day. While the decision of the matter was pending the men struck in violation of their standing agreement with the Employers' Association to remain at work pending the arbitration of any demand. The employing construction companies in New York have been increasing their working forces steadily and latterly have not been seriously hampered.

The strike among the Eastern rolling mills has shown some change during the week. The American Car & Foundry Company has made concessions to its employees at Berwick, Pa., and has started its mill. This is said to be due to the fact that the company is very greatly in need of iron for its car shops and the Executive Committee decided that it would not be advisable to prolong the contest. Up to Tuesday of last week the rolling mill of the Wilmington Iron Company, Wilmington, Del., was in regular operation with the understanding that the company and the men would abide by the decision of the contest with the other Eastern mills. On that day, however, the men were peremptorily ordered out by the officers of the Amalgamated Association and left their work in the middle of a heat and with the furnaces filled with iron. The situation at the other mills continues precisely as it has been.

Owing to the lower prices ruling for some time for iron bars, wages of puddlers in the Central West, working under the Amalgamated scale, will be reduced for July and August 25 cents, or from \$6 to \$5.75 a ton. Wages of finishers will be reduced 2 per cent. Wages in sheet and tin plate mills under the Amalgamated scales will be the same in July and August as they were in May and June.

As yet no wage scale for the 18-in. mill at the Brown-Bonnell works of the Republic Iron & Steel Company has been arranged between that company and the Amalgamated Association. A special scale was asked for this mill by the men, which the company refused to grant.

It is reported that since the beginning of the boiler-makers' strike in Chicago early in June several hundred boiler-makers, helpers and handymen have gone to that city. Upwards of 125 former employees of the companies affected have signed individual contracts with their respective firms. Every boiler shop is now open and in operation, and outside as well as inside work is being undertaken by the various shops.

The Council of District No. 15 of the International Association of Machinists, which includes New York and vicinity, has decided upon a campaign of organization designed to bring all the journeymen machinists in that district into the union. Thus far no demands have been made, but it is expected that an eight-hour movement will soon be undertaken.

The Lorain works of the National Tube Company, Lorain, Ohio, turned out in twelve hours 6023 lengths of 1-in. pipe on July 24, the best previous record of the mill having been 5000 lengths.

The Atlanta Tin Plate & Sheet Mill.

The Atlanta Tin Plate & Sheet Mill, Atlanta, Ind., is a new corporation, which has been organized and has purchased from receiver's hands the new mill just completed by the Atlanta Rolling Mill & Tin Plate Company. The construction of this mill was commenced in 1903 and it includes six sheet heating furnaces, two annealing furnaces, six black plate mills, four 32 and two 36 in. hot rolls and four stands 34-in. cold rolls. The mill, which is thoroughly modern and complete, has never been operated. The new company paid cash for its purchase, has no bond issue and has ample working capital. Operations will be commenced by September 1. The mill has a rated annual capacity of 14,000 tons and operates on manufactured gas as fuel. The president is Edward L. McKee, president of the Merchants' Heat & Light Company, Indianapolis; vice-president, Harold D. Hibben of Hibben W. Hollweg & Co., Indianapolis; treasurer, Edward B. Porter, cashier Indiana National Bank, Indianapolis; general manager, Charles A. Ford, Kokomo, Ind. Other directors are Hiram P. Wasson of H. P. Wasson & Co., Indianapolis; Wm. H. Marer, cashier First National Bank, Tipton, Ind., and Edgar S. Walton, cashier Bank of Atlanta, Atlanta, Ind.

Finishing touches are being put on the plant, and the company expects to have it in operation the last week in August. The output will be about 50 tons per day of light sheets. No tin plate will be manufactured, but the company expects to gradually work into sheet specialties, devoting most of its attention to very light gauges and deep stamping stock. All machinery, excepting the roll trains, will be electrically driven. Arrangements have been made for an ample supply of sheet bars, and orders for the product are being booked for September and later delivery.

Foundry Wage Advances.

The *Iron Molders' Journal* for July gives the following list of wage adjustments which have been made with the Iron Molders' Union in the various cities mentioned. These changes of working conditions were made principally in the month of June; some of them in the latter part of May. They represent either advances in wages or a reduction in hours, or both:

Memphis, Tenn., \$3.25 minimum for a nine-hour day. Omaha, Neb., and Council Bluffs, Iowa, \$3.10 minimum for a nine-hour day. Richmond, Ind., an advance of 25 cents a day and a minimum rate for coremakers. Kewanee, Ill., an agreement, with advance in wages. Newark and North Newark, N. J., a minimum of \$3 and \$3.25 for bench and floor molders, respectively, and \$3 for coremakers, with a nine-hour day. Portland, Ore., a minimum of \$3.75 for a nine-hour day. Various points in Montana, a minimum of \$4.50 for an eight-hour day. Seattle, Wash., a minimum of \$3.75 for a nine-hour day. Albany, N. Y., a minimum of \$3.25 for molders and \$2.75 for coremakers for a nine-hour day. Tacoma, Wash., a minimum of \$3.75 for a nine-hour day. Troy, N. Y., a minimum of \$3.25 for molders and \$3.10 for machine operators for a nine-hour day. Schenectady, N. Y., an advance in wages. Holyoke, Mass., a nine-hour day. Plainfield, N. J., a minimum of \$3 for a nine-hour day. Atchison, Kan., a minimum of \$3 for molders. Winnipeg, Man., an advance of 1½ cents per hour. Fort Worth, Texas, a minimum of \$3.50 for a nine-hour day. Amsterdam, N. Y., a minimum of \$2.75 and a shorter day. Springfield, Mass., a nine-hour day. Ballston Spa, N. Y., a nine-hour day.

The article mentions an occasional shop which did not conform to the established rate and says that in such cases strikes are in progress.

The Central Iron & Coal Company, Incorporated, Lebanon, Pa., has been recently reorganized, with Felix Pflaum as president and general manager, and M. L. Tyroller as secretary and treasurer. The company will make a specialty of scrap material of all classes and has made extensive improvements in its yard facilities.

The Machinery Trade.

NEW YORK, July 25, 1906.

The inability to secure deliveries within a reasonable time seems to have curtailed to some extent the placing of orders, particularly for large lots. The demand for machine tools is apparently as good as it has been for some time, and there is very little doubt but actual business would be at the spring level could the prospective buyers secure the machines. Under the circumstances many are holding aloof from the market, and those who do place business only take a few machines. Inquiries for early delivery are plentiful, and as soon as deliveries ease up an increased volume of orders is expected. During the week an inquiry for seven or eight heavy machines was received, and some purchases were made by the New York Central and Pennsylvania railroads.

The conditions in the machinery trade are such as to inspire confidence. A prominent mining machinery man said this week that the trade in that line was exceptionally good for those who deal in outdoor equipment, as it is comparatively seldom that orders are placed in the midsummer, as deliveries in such cases are made about the time that outside operations slacken somewhat because of the weather conditions. In the conveying machinery line most manufacturers claim that they have all they can do, and that the large orders which have come from the Great Lakes and the Pennsylvania coal regions have compelled them to take no large orders for delivery under several months. One high speed engine manufacturer declared this week that he will be unable to deliver current orders until after next January, at least, but, as stated last week, this condition does not exist in the case of some manufacturers of small engines who can give better delivery.

Union Pacific's New Omaha Shops.

Plans are being prepared in the office of the chief engineer of the Union Pacific Railroad at Omaha for new shop buildings and improvements in the shop yards that will necessitate an expenditure of about \$750,000 during the current year. These shops will consist of a series of buildings, so arranged and of such size as will facilitate the handling of shop work in the most expeditious manner and will enable the road to turn out its repair and remodeling work without loss of time or without inconvenience to its other demands. The yards are situated on a level plat of land approaching the banks of the Missouri River east and a little north of the main part of Omaha. For several years the company has been engaged in improving and increasing its shop facilities on this stretch of land; has completed and is using a model locomotive plant, blacksmith shops, offices and laboratory buildings, and will now add to its already extensive plant new car shops. These new buildings are to include freight car and coach repair shops, 492 ft. long, facing to the south, with one wing, 342 ft., extending towards the north, one story in height, with steel framing and brick curtain wall construction, fitted with cranes, machinery and modern conveniences for handling and repairing all classes of cars. Facing the building and serving it and the paint, wheel and truck shop, which will be built directly north of the car shops proper, will be installed a 90 x 350 ft. transfer table, which will enable cars to be shunted back and forth from and to any and all of the several departments. The paint, wheel and truck shop will be similar in general construction to the car shop building, but will be 178 x 302 ft., fitted with crane, &c., for easy handling of wheels and trucks and this class of work, while near the building, but separated from it, will be the paint storage house. Heavy cranes for service near the coach shops and for wrecked trucks will be installed in the yards, while a wheel platform, depressed tracks and transfer table will be necessary adjuncts.

A new machine shop is to be erected at Morris Park by the Long Island Railroad, and the electrical superintendent is making some inquiries in the trade for catalogues, with a view to purchasing a general line of machine tool equipment. Those who are in a position to know say it will not be long before the railroad will come into the market for a considerable amount of railroad equipment.

A number of large orders have recently been placed for machinery equipment for the extensive addition which is to be made to the plant of the Middletown Car Works, at Middletown, Pa. W. S. Barstow & Co., 56 Pine street, New York, are the consulting engineers in charge of the machinery details. They are superintending the construction of an addition to the company's plant, which will be capable of turning out some 12 to 15 cars a day. The additions include a main building, 70 x 400 ft., and a press shop, 70 x 200 ft. The list of requirements included some heavy cranes, orders for which have already been placed, as have been orders for 12 jib cranes, which are to be furnished by the Case Mfg.

Company, Columbus, Ohio. The company will buy no power equipment, as it has an extensive power plant already, and in addition it intends purchasing electric power from another corporation. The new works will be used only for the manufacture of steel cars, and it is the company's intention to go into the manufacture of that line on an extensive scale. It makes nothing but frame and shop cars, and its plant, which is now devoted to the manufacture of wooden body cars, is an extensive one.

It is probable that before long the De Lamar Copper Refining Company will come into the market with a new list of machinery needs for the equipment of a sampling mill that the company proposes adding to its plant at Chrome, N. J. George K. Fisher, 17 Battery place, consulting engineer, is preparing the plans.

The American & British Mfg. Company, Providence, R. I., has about completed plans for the construction of an extensive addition to its works at Providence. The change is in the nature of a reorganization of the works, which have been used for the building of the Diesel combustion engine, and will now be utilized for manufacturing the Wilkinson steam turbine. The company has inquiries in the market for machinery equipment, principally in the power and heavy crane lines, and it is probable that before long there will be a large list, as much new equipment will be needed to carry out the company's project. The plans already developed provide for about 70,000 sq. ft. of additional area, which will include a main building and two other structures. While some of the heavier machinery used in the old works will be utilized in the new building, it will by no means be adequate for the company's needs, and there is much to be bought. At present the company occupies the works built by George H. Corliss for the manufacture of the Corliss engine, and while they are extensive they are by no means up to date, and it will require a considerable expenditure to put them into shape for modern manufacturing purposes.

The plant of the Adams Machine Works, Corinth, Miss., which was partially destroyed by fire recently, at an estimated loss of \$150,000, will be rebuilt. Considerable equipment will be required, including planer, lathes, drill presses, shapers, bolt machine and pipe machine. A detailed list of what will be purchased has not yet been prepared, but will be in a few days.

The Acme Truck & Tool Company, St. Louis, Mo., has incorporated, with a capital stock of \$600,000, to do a general rolling mill and manufacturing business, the specialty being the manufacture of railroad trucks. In addition a complete line of blacksmiths' tools, railroad tools and heavy hardware will be manufactured. The company has purchased the plant of the Standard Truck & Forging Company, which it will move to large and commodious quarters on the St. Louis Belt Line. This acquisition will give it increased facilities and will enable it to largely increase its output. W. D. Biggens & Co., who are sales agents for the new company, will issue a new catalogue and expect to solicit hardware jobbers' trade on a line of tools which will be a separate department from the railroad trucks. The company's plant will be one of the largest west of Pittsburgh, manufacturing blacksmiths' and railroad track tools.

It is understood that the New York Edison Company has some inquiries in the market for equipment for its Forty-first street plant, and it is said that there is still some conveying machinery for coal handling purposes to be bought. The company has been placing some orders for general equipment of late and the equipment for its Waterside station is now being installed.

The new drop hammer plant of Merrill Brothers, Brooklyn, N. Y., is being erected at Flushing and Metropolitan avenues, Queens Borough. We understand that E. W. Merrill, Jr., is in charge of the equipment for this plant.

A project that will call for a large expenditure for machinery is being developed by interests closely allied with the Development Company of Cuba, in which James N. Ceballos of the banking house of that name, with offices in the Lords Court Building, is interested. The company proposes to construct a large sugar refinery in the vicinity of Ceballos, a town laid out by the Development Company some time ago. It is said that the plant will be one of the largest, if not the largest, of its kind on the island, and it is proposed to utilize the cane raised on the Cega Grande sugar plantations. The engineer has not been selected as yet, and consequently no machinery has been purchased, but it is given out that active preparations are being made for constructing the plant, which it is proposed will take care of the output of some 3000 acres of cane already under cultivation. This cane will be ready for grinding next year, and by that time it is proposed that a plant now in course of construction by the interested parties at Silverio, 16 miles south of Ceballos, will be completed. There is in course of erection at Silverio a plant with a capacity of about 3800 tons of cane daily, and the new plant which the company contemplates building will have a capacity of about 4000 tons per day. It is expected to be ready to take care of the second ensuing crop. At the office of Mr. Ceballos it was announced that no arrangements have been made as yet for the actual building of the new plant, although the proposi-

tion has been thoroughly financed. It was said that within a few weeks a general contract for the construction of the buildings will probably be let, and then the other engineering details relating to the equipment of the plant will be gone into.

Manning, Maxwell & Moore, New York, have recently received orders for eight 6-ton electric unloading cranes for delivery at points along the Panama Canal. The orders were placed by the Panama Canal Commission.

The Case Mfg. Company, Columbus, Ohio, has been awarded a contract by the Pittsburgh Reduction Company to furnish 17 4-ton, 5-motor special traveling cranes, in spans of 35 to 40 ft. Other orders recently secured by the Case Company are as follows: Lake Shore & Michigan Southern Railroad Company, 20-ton, 72-ft. span, 5-motor traveling crane; Sioux City Traction Company, Sioux City, Iowa, 20-ton, 68-ft., 3-motor electric traveling crane; Toledo-Massillon Bridge Company, Toledo, Ohio, 15-ton, 40-ft. span, 3-motor electric traveling crane; Buckeye Steel Castings Company, 30-ton, 78-ft. span, 4-motor standard crane; Scioto River power station, Columbus, Ohio, 20-ton, 66-ft. span, 3-motor standard crane; Challengsworth Foundry & Machine Company, Mt. Vernon, Ohio, 20-ton, 47-ft. span, 3-motor traveling crane.

Catalogues Wanted.—The Pamlico Iron Works, Washington, N. C., desires catalogues, price-lists, &c., from manufacturers of hot air engines.

Philadelphia Machinery Market.

PHILADELPHIA, PA., July 24, 1906.

While the amount of sales of machine tools made during the past week was not large, the volume is considered fairly good for the season of the year. The midsummer vacation period is quite an important factor in regard to the placing of business at this time, and a number of instances have developed during the past week where orders that were surely expected to have been closed have been temporarily deferred on that account. The same influences will no doubt continue to be felt from time to time during the remainder of the summer.

Nearly all the business placed during the past week has been for tools and machines of the medium and smaller sizes, and in almost every case the orders have been for single tools. Orders for any quantity of tools to one buyer have been few and far between. One of the leading interests in this territory has surprised both manufacturers and dealers by the number of cancellations recently made on orders for tools placed some time ago. As the demand has been particularly good, however, no material hardship has been experienced in making re-sales of such tools.

Inquiries continue in good number, but do not lead up to business very promptly. There are exceptions, of course, but a good deal of the present inquiry is believed to be for the purpose of getting a line on costs, action on which is not likely to be taken until early in the fall. The demand for heavy tools continues weak, the bulk of the sales and recent inquiries having been for the lighter tools. The railroad companies seem to be held up in the immediate placing of orders. Very little business has come out on the Pennsylvania Railroad specifications now before the trade, and it is thought that several weeks may elapse before any more of this business is placed. No new specifications from the railroads are on the market in this territory, although a substantial list is looked forward to at an early date from one of the Southern roads.

Manufacturers almost without exception continue very busy; plants are running at their full capacity, and the volume of new business coming in, while somewhat scattered, is sufficient to keep order books well filled. Deliveries therefore show but little signs of betterment. In addition to the number of orders on hand many manufacturers are hampered by the inability to get prompt deliveries of raw and finished materials, particularly steel products, and many delays on what might to-day be called fair shipments arise from this condition.

While there has been no change in the general foreign demand for the standard lines of machine tools there has been a greater volume of business done in certain special lines. File making machinery has been in particularly good demand recently, as have also a number of specialties for power transmission.

Sales of boilers and engines have not been very large during the past week. Immediate business in this branch of the trade is rather quiet, particularly in the medium and smaller horse powers. Several good propositions for high power installations, however, are said to be in sight, and expected to close up at an early date. The demand for second-hand boilers and engines is a little more active, but there is still room for considerable improvement.

Dealers in second-hand machinery and tools report fairly

satisfactory conditions, and a number of sales have recently been made, particularly to customers who cannot wait for extended deliveries on new tools and machinery. In some lines and grades, however, it is difficult to meet the demand, although stocks are usually maintained in pretty good shape.

Both iron and steel foundries continue to have a large tonnage offered, and in many cases, particularly among the makers of steel castings, it is impossible to take the business and make anything like deliveries desired. Some of the latter advise us that their capacities are so fully taken that they are obliged to refuse contracts for good tonnages of work to be delivered during the last half of the year. Gray iron plants, while generally busy, are able to handle work to better advantage, and while machinery manufacturers at times complain of delayed deliveries, there are a number of foundries which can furnish castings fairly promptly.

The Otto Gas Engine Works is taking estimates for a machine shop 139 x 500 ft., to be erected at its new plant at Wilmington, Del. The building is to be constructed of structural steel on concrete piers, resting on piles. Bids are to be received until July 30. The general equipment for the shop, together with the crane equipment, have not yet been decided upon.

The C. H. Wheeler Mfg. Company, manufacturer of condensers, pumps, heaters, water cooling apparatus, &c., located at Germantown Junction, Philadelphia, has taken floor space in Section R, Philadelphia Bourse Machinery Hall, where a permanent exhibit and branch office will be maintained.

The Hess Machine Works, manufacturer of file making machinery, is very busy, the demand from both foreign and domestic sources being the best the works has ever experienced. A large number of orders have recently been taken, while deliveries include the shipment of four sets of its new design file making machines for export to France; a like number to customers in Germany, while two and three sets of machines have been respectively exported to customers in Switzerland and in Japan. Ten sets of machines, several of which are about ready for delivery, are also on order for a domestic purchaser.

The Betts Machine Works, Wilmington, Del., has recently shipped the Japanese Government, at Kobe, Japan, two special 5-ft. boring mills, and will in the next 60 days ship a 10-16 extra heavy extension boring mill, weighing 120,000 pounds, to the same purchaser. Eight special frog and switch planing machines have also been recently furnished the Lorain Steel Works, Johnstown, Pa., and an extra heavy 10-16 boring mill has been shipped the N. P. Pratt Laboratory, Atlanta, Ga. General conditions are reported by the Betts Works to be generally satisfactory; inquiries and orders are numerous and the plant is busy in every department.

Manning, Maxwell & Moore, 721 Arch street, have made a number of improvements to their salesroom and office, whereby their facilities have been largely increased, also enabling them to make a better display of machinery and tools, as well as to carry a more varied stock for prompt shipment. They report a very satisfactory demand for all classes of tools, more particularly, however, for those of the medium and lighter classes. A number of good orders have recently been booked, and the outlook for the summer trade is considered very promising.

The Espen-Lucas Machine Works has been able to complete delivery on a greater number of tools during the past month than ever before in any corresponding period. The month of July has so far also been a good one for new business, and a large number of orders has been taken for cold saw cutting off machines and other tools. Some of the recent deliveries include a crank shaft turning machine for parties in northern New York, and a large floor boring, milling and drilling machine for a company in the Middle West. Steel foundry cold saw cutting off machines, I-beam and bar cutting machines have been shipped to purchasers in New England, in the Pittsburgh District, the Middle West and to a number of local and nearby companies. Saw grinding machines have also been shipped with a number of these machines.

Chicago Machinery Market.

CHICAGO, ILL., July 24, 1906.

Lists covering the prospective equipment purchases of five Western roads are now in the hands of machinery dealers and manufacturers, but up to the present no awards have been made. The aggregate purchases will amount to over \$300,000, and are the heaviest railroad requirements heretofore figured on in the Western machinery trade during the summer months. Purchases of miscellaneous tools are heavy, and the deferred deliveries of manufacturers have not curtailed the volume of trade to any appreciable extent. Desirable second-hand equipment continues in demand, at prices almost on a par with the cost of new tools. Offerings are very light and prices high, so that dealers' margins are less than during periods of normal business activity. Manu-

facturers of electrical equipment without exception are behind on their deliveries of large and small generators and motors.

The Tudor Boiler Mfg. Company, Cincinnati, Ohio, is making a few changes in its shop. It has just installed two small traveling cranes and is putting in place now a third hydraulic forging press. The company is in the market for punching machines of horizontal and vertical types, capacity 1½-in. hole in 1-in. plate, and would like to receive catalogues, quotations, &c., from manufacturers of such machines. It will shortly be in the market for an air compression riveter.

The St. Louis Frog & Switch Company, St. Louis, Mo., will build a new plant for the manufacture of frogs, switches, crossings, track appliances, &c. The plans as prepared by Lichter & Jens, consulting engineers, call for the erection of a main building, 100 x 200 ft., to cost \$150,000. A large part of the equipment has already been arranged for.

The Patrick Cement Company has been incorporated at Stanton, Ky., by J. C. Patrick, J. D. Atkinson and Mrs. Kate S. Bohannon. A plant will be established for the manufacture of Portland cement, having a capacity of from 500 to 1200 barrels. The machinery equipment for the plant will probably not be specified before the middle of August.

The city of Chicago will receive bids until August 10 for furnishing two horizontal return tubular boilers, steam and water piping and auxiliaries for the Springfield avenue pumping station.

The Chickasha Water Power Company, Chickasha, I. T., has been incorporated, with a capital of \$75,000, for the purpose of developing the water power of the Washita River, near that city. Although all plans have not been perfected, it is expected to put in a stone and concrete dam and install two 500-hp. water wheels, two 375-kw. 6000-volt generators, 3 miles of pole line and wires, and a number of three-phase induction motors. C. E. Ross is secretary and treasurer, and Dennis O'Brien and L. E. Wetling are also interested.

Since the acquisition of exclusive rights to build and sell Christensen air brakes the Allis-Chalmers Company, Milwaukee, has been organizing this department and has placed at its head J. H. Denton, formerly general superintendent of the National Brake & Electric Company. Shop facilities are being provided as rapidly as possible, and it is expected that shipments may be made from stock within 75 days from date. The entire second floor of the north shop, Reliance works, now occupied by the company's general offices, will be devoted to the manufacturing and assembling of air brake equipments. The offices are to be removed to the West Allis works. The Denver office has been removed to the McPhee Building, Seventeenth and Glenare streets, and the El Paso, Texas, office to the Guarantee Trust Building, rooms 301-306.

William Fletcher Barnes, president of the W. F. & John Barnes Company, Rockford, Ill., manufacturer of upright drilling machines, scroll saws and other tools and machinery, has disposed of his interest in the company to Harold Irving Pratt of Brooklyn, N. Y. Mr. Barnes will soon retire from participation in the affairs of the company and will devote his attention to private interests at Rockford and Chicago. John Barnes will retain his interest and continue for the present as managing head of the company, it being Mr. Pratt's intention to remain in Brooklyn. The business was established by the two Barnes brothers nearly 40 years ago. The present shops were built in 1881, but have received considerable enlargement since that time and several hundred workmen are now employed. Mr. Barnes' retirement will not affect the corporate name of the company. The officers of the reorganized company are: President, John Barnes; first vice-president, Harold I. Pratt, Brooklyn; second vice-president, John S. Barnes; third vice-president, George O. Forbes; secretary and treasurer, Aubrey T. Barnes.

New England Machinery Market.

WORCESTER, MASS., July 24, 1906.

The market has changed little since last week. The extremely enervating weather has had its effect upon business, but to a surprisingly small extent, considering the time of year and a succession of days which have taken the energy out of everyone. A few dealers even assert that they have noticed no difference as compared to six weeks ago.

An occasional manufacturer of machine tools reports a slight letting up in orders and inquiries, which condition they seem to welcome, but the usual report is that no diminution of business is apparent.

The interesting report comes from Pawtucket, R. I., that a Boston syndicate has purchased the large plant of the Brown Machine Company, better known as the James S. Brown shop, in that city, and propose to manufacture cotton machinery and lawn mowers. It may be presumed that the new owners will require a considerable amount of machine tool equipment, in addition to the old machinery now in the works.

The power boiler manufacturers of New England are finding business a little slack with them, as compared with what it has been, and they complain that prices are not

what they should be, considering that other lines of manufacturing are making excellent profits on their products. The steam boiler business is suffering for lack of the kind of co-operation which comes with the existence of an association. No understanding of any sort exists between the various manufacturers. It is every man for himself, without hope of favor from his competitor. The condition is much the same that existed in the machine tool trade before the organization of the National Machine Tool Builders' Association. No attempt has been made to organize the boiler business for years, at least no serious attempt. Some 15 years ago an association was attempted and proceeded far enough in its organization to permit of an agreement on certain details of the business. This agreement was broken within a few weeks of its inception and the association quickly died. Keen competition exists and prices are consequently at a low margin of profit. What is needed is organization, and it does not follow from the failure of an attempt years ago that an effort made to-day would not be successful. The benefits accruing from the existence of an association in a trade are becoming better known. Too many associations have been organized and maintained without serious friction between the members, and at a great money gain to all, to leave any manufacturer in the dark as to what this form of co-operation means to a trade. The present falling off in business is not attributable to lack of organization, of course, but to a lessened demand for new boilers, though the change in this respect cannot be very general, judging from the number of plans announced in recent months for increasing existing power plants or establishing new plants. It is a fact, however, that boiler manufacturers have made more money out of branches of their business other than boilers, such as tanks, stacks, keirs and kindred work than they have out of boilers where the customer is apt to go into the open market.

Hill, Clarke & Co., 156 Oliver street, Boston, have purchased the entire shop equipment of the Goddard Machine Company, Holyoke, Mass., and is offering it to the trade. The tools will remain at the works in Holyoke for a fortnight and will then be moved to the company's store at Boston. The list includes 16 engine lathes, a Gould & Eberhardt shaper, three planers, a Potter & Johnson semi-automatic turret lathe, Landis universal grinder, a Doty punch and shear, two Snyder drills, W. E. gang drill, Garvin milling machine, Standard surface grinder, several speed lathes, pattern lathes and other tools which make up a complete machine shop equipment.

The Wolverine Motor Company, Grand Rapids, Mich., which is to move its business to Bridgeport, Conn., has begun work on the new plant, which has been described in some detail in this column.

The G. Drouve Company, Bridgeport, Conn., manufacturer of skylight and sheet metal work, is to erect a new factory on Housatonic avenue, in that city. The building will be 50 x 300 ft., one story and basement. A spur track will run the full length of the building.

The Hendey Machine Company, Torrington, Conn., manufacturer of machine tools, states that there is no truth in the newspaper statement that another large brick addition is contemplated, following the comprehensive improvements already noted in this column. The company is enlarging its boiler house and installing two 200-hp. Babcock & Wilcox boilers, equipped with automatic stokers.

The Record Electric Railway Signal Company has been organized under Rhode Island laws, with authorized capital stock of \$300,000, to manufacture electric block signaling systems, and proposes to establish a manufacturing plant at Providence. The incorporators are Eugene F. Bowen, Farland S. Strathahan and Edward E. Synge, all of Providence. The company is not yet ready to state what its machinery requirements will be.

The Singer Mfg. Company proposes to greatly increase the capacity of its recently acquired works of the Wheeler & Wilson Mfg. Company, Bridgeport, Conn. The announcement comes from Bridgeport that it contemplates doubling the capacity of the already very large plant. The general plan includes the utilization of the large factory building formerly occupied by the Liberty Bicycle Company. A new power house is now being erected, and a subterranean conveyor is being put in to take coal from cars on a railroad siding to the boiler house. One purpose of the increase in output is the determination to expand the foreign branch of the business.

The Woburn Machine Company, Woburn, Mass., manufacturer of hide and leather working machinery, has purchased land adjacent to its property and is planning to enlarge its plant by the erection of a foundry and other buildings, details of which are not yet ready for announcement.

Fay & Scott, manufacturers of machine tools, Dexter, Maine, are putting on the market a new size of planer centers, made extremely heavy, with 36-in. swing and heavy enough to be raised to 40 in. The firm has previously made these centers in 13 and 20 in. sizes, and the new sizes follow the general lines of the old, the difference being in weight. The 36-in. size is believed to be the largest ever manufactured.

The city of Concord, N. H., proposes to build a new manual training school. The equipment requirements are not yet ready, as plans for the building have not yet been accepted.

Cleveland Machinery Market.

CLEVELAND, OHIO, July 24, 1906.

Never in the history of the lake trade has there been such activity in the demand for large ore vessels as was experienced last week, and the record of contracts made during that period will probably stand for a long time. Not only were the contracts noteworthy for their number, but some of the vessels to be built will have a larger capacity than anything now afloat on the lakes.

The American Shipbuilding Company, Cleveland, has commenced work on extensive improvements at its Lorain, Ohio, yards, which will practically double its capacity, making it much larger than any plant on the lakes. The improvements include the erection of a 1050-ft. dry dock, the placing of two new berths which will accommodate boats up to 750 ft. in length, the erection of new and larger machine and plate punching shops, an enlargement of the cabinet and joiner shops and the erection of a large power plant. All the machinery will be electrically driven, and large electrically operated pumps will be installed for the dry dock. A considerable amount of machinery for the machine shop was recently contracted for.

The Ravenna Furnace & Heating Company, Ravenna, Ohio, has been formed with \$20,000 capital stock by Daniel Harris and others of Ravenna and I. A. V. Davidson of Akron. The company will manufacture heating furnaces designed by Mr. Davidson. Work has been started on a plant in Ravenna. The main building will be 32 x 50 ft., with a cupola room, 8 x 16. The plant is located adjoining the Pennsylvania and Baltimore & Ohio railroads, giving it excellent shipping facilities.

The Ohio Elevator & Machine Company, Columbus, Ohio, incorporated with \$250,000 capital stock by Charles H. Brown, Owen T. Snyder, W. J. Sauer, Francis M. Taylor, L. T. Slater and Mathew Posshinger, will shortly commence business in Columbus. The company has acquired the buildings formerly owned by the New American Elevator Company, and will also absorb the Snyder-Taylor Elevator Company. The officers of the latter will be identified with the management of the new company. Plans have been completed for an addition to the plant, which will largely increase the capacity. The company will build elevators, produce steel castings and carry on a general machine business.

The Star Ice & Storage Company, Zanesville, Ohio, has been formed, with \$100,000 capital stock, by T. F. Spangler, John Hoge, S. A. Weller and others of Zanesville. The company will manufacture ice and will install a 50-ton ice machine, an electric lighting plant, elevators and other equipment. Plans for the plant are being prepared.

The Thew Shovel Works Company, Lorain, Ohio, is erecting a large addition to its plant. The structural work is being erected, and it is expected that the addition will be completed within 60 days. The company is adding to its equipment for the production of steam shovels.

The Retail Merchants' Association, Massillon, Ohio, has reached an agreement with the Christman Company of Dillonvale whereby the company will erect a plant in Massillon for the manufacture of coal testing, oil and well drilling machinery and mine supplies, including coal tripplies and coal cars.

Government Purchases.

WASHINGTON, D. C., July 24, 1906.

It is expected that bids will soon be asked by the Government on a large amount of machinery to equip the proposed powder factory, for the construction of which Congress has appropriated \$165,000. B. W. Dunn of the Ordnance Department, one of the most skillful ammunition experts in the army, has been detached from Sandy Hook and ordered to prepare plans for the works.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until August 14 for the following machine tools for the Portsmouth and New York navy yards: Schedule 50, engine lathe; schedule 51, centrifugal pumps, shaper, bending machines, blower; schedule 52, steam hammer, blower, lathe.

B. A. Beeson, treasurer National Soldiers' Home, Elizabeth City, Va., will receive bids until August 14 for three 150-hp. steam boilers.

The Constructing Quartermaster, United States Army, St. Paul, Minn., will receive bids until August 9 for boiler and feed water heater for the pumping plant at Fort Snelling, Minn.

The Isthmian Canal Commission will receive bids until

August 4, under circular No. 319, for slotting machines and other supplies.

The following bids were opened July 12 for a power plant for the United States Soldiers' Home, Washington, D. C.:

Bidder 2, Manning, Maxwell & Moore, New York; 3, A. D. Granger Company, New York; 4, C. & C. Electric Company, New York; 7, Harry Alexander, New York, for items 6, 7, 14, 15 and 16 combined, \$153,000; 8, Westinghouse Electric & Mfg. Company, New York; 10, Edgemore Iron Company, Edgemore, Del.; 11, Western Electric Company, New York; 15, North Penn Iron Company, Philadelphia, Pa.; 17, Northern Engineering Company, New York; 18, Steel & Conduit Company, Jersey City, N. J.; 20, General Electric Company, Schenectady, N. Y.; 21, Lee Reutzler Company, New York; 23, McCay Engineering Company, Baltimore, Md.; 26, Allis-Chalmers Company, Milwaukee, Wis.; 28, Whiting Foundry Equipment Company, Harvey, Ill.; 29, Bates Heating Company, Washington, D. C.; 31, Brennan Construction Company, Washington, D. C.; 32, Heine Safety Boiler Company, Philadelphia, Pa.; 34, Crook-Horner Company, Baltimore, Md.; 38, Carbondale Machine Company, Baltimore, Md.; 40, Henry Voigt Machine Company, Louisville, Ky.; 41, Penn Bridge Company, Washington, D. C.; 42, Babcock & Wilcox Company, New York; 44, American Turbine Engineering Company, Washington, D. C.; 48, Handler-Casey Company, Chicago, Ill.

Item 1. Power house complete—Bidder 31, \$125,419; 41, \$132,290; 48, 178,850. The above for the work in accordance with the Government specifications. Bidder 31 proposes to use concrete construction in lieu of steel for \$121,000.

Item 4. Boilers, stokers, economizers, &c.:

For four 400-hp. boilers—Bidder 3, \$43,700; 10, \$31,600; 21, \$37,800; 29, \$33,451; 23, \$36,473; 34, \$38,011; 42, \$37,410, or if cast iron headers are used \$35,768; 48, \$34,500.

For three 400-hp. boilers—Bidder 3, \$35,450; 10, \$25,200; 21, \$27,800; 29, \$26,841; 32, \$28,635; 34, \$29,711; 42, \$29,555 (for cast iron headers, \$28,254); 48, \$27,500 (if B. & W. boilers are used, \$28,000).

Item 5. Crane for engine room—Bidder 2, \$1250; 15, \$1315; 17, \$1400; 28, 1240; 48, \$1568.

Item 6. For one 450 and two 350 hp. steam engines—Bidder 7, \$38,000; 11, \$43,625; 26, \$35,030; 34, \$34,294; 48, \$35,800.

Item 6, alternate A. For one 450 and one 300 hp. engines—Bidder 7, \$26,950; 11, \$30,650; 26, \$24,451; 34, \$25,449; 48, \$27,200.

Item 6, alternate B. Two 300-hp. engines—Bidder 7, \$29,263; 11, \$30,075; 26, \$26,563; 34, \$19,750; 48, \$30,300.

Item 7. Generators, one 300, two 200 and one 150 kw. engine type—Bidder 4, \$14,516; 7, \$17,000; 8, \$17,000; 11, \$14,900; 20, \$15,300; 23, \$15,295; 26, \$18,266; 34, \$16,491; 48, \$16,065.

Item 7, alternate A. One 300, one 200 and one 150 kw. direct connected engine type generators—Bidder 4, \$11,038; 7, \$13,936; 8, \$12,800; 11, \$11,270; 20, \$11,700; 23, \$11,685; 26, \$14,148; 34, \$12,453; 48, \$12,225.

Item 7, alternate B. Two 200 and two 150 kw. direct connected engine type generators—Bidder 4, \$12,360; 7, \$15,043; 8, \$14,125; 11, \$12,290; 20, \$12,125; 23, \$13,306; 26, \$15,856; 34, \$13,814; 48, \$12,787.

Item 8. Three 300-kw. direct connected steam turbo generators—Bidder 20, \$36,000; 44, \$37,400; 48, \$32,000.

Item 8, alternate A. Two 300 and one 150 kw. direct connected steam turbo generators—Bidder 20, \$30,635; 44, \$36,200.

The following bids for machinery for the Isthmian Canal Commission were opened July 16, circular No. 315:

Bidder 4, Belknap Hardware Company, Louisville, Ky.; 9, Buffalo Forge Company, Buffalo, N. Y.; 15, Drew Machinery Agency, Manchester, N. H.; 16, Duff Mfg. Company, Pittsburgh, Pa.; 17, The Fairbanks Company, New York; 24, Handlan-Buck Mfg. Company, St. Louis, Mo.; 31, Manning, Maxwell & Moore, New York; 36, Motley, Green & Co., New York; 46, P. H. & F. M. Roots Company, New York; 52, B. F. Sturtevant Company, Hyde Park, Mass.; 54, Vermilye & Power, New York.

Class 1. Two vertical boring machines—Bidder 24, \$1150; 31, \$2338; 36, \$1176.86; 54, \$1187.46.

Class 2. One car ripping saw—Bidder 24, \$483.50; 31, \$474; 36, \$478.27; 54, \$477.50.

Class 3. Jacks—Bidder 4, \$1095.33; 16, item 4 \$298, item 5 \$291; 17, \$1239.30; 31, \$1212.10.

Class 4. Blowers—Bidder 9, \$2210; 15, \$2142; 24, \$2226; 31, \$2132; 46, items 13 and 14, \$860; 52, \$2288.

The following bids were opened July 17 for machinery for the Isthmian Canal Commission, circular No. 316:

Bidder 2, Bertsch & Co., Cambridge City, Ind.; 9, Crane Company, Baltimore, Md.; 11, Drew Machinery Agency, Manchester, N. H.; 13, Fairbanks Company, New York; 17, Hallidee Machinery Company, Seattle, Wash.; 18, Handlan-Buck Mfg. Company, St. Louis, Mo.; 23, Manning, Maxwell & Moore, New York; 25, Motley, Green & Co., New York; 26, Niles-Bement-Pond Company, New York; 27, C. I. Patterson Company, New Orleans, La.; 28, Queen City Supply Company, Cincinnati, Ohio; 30, H. A. Rogers Company, New York; 38, Stoever Foundry & Mfg. Company,

New York; 39, Van Dyck-Churchill Company, New York; 44, Vermilye & Power, New York.

Class 1. One iron planer—Bidder 17, \$1880 and \$2104; 18, \$2750; 25, \$2276; 26, \$2152; 27, \$3050; 39, \$2775.

Class 2. One upright drill—Bidder 17, \$160.90; 23, \$110.50; 25, \$119; 27, \$110.50; 28, \$150.

Class 3. One vertical boring and turning mill—Bidder 23, \$3175; 26, \$4118; 27, \$4014.

Class 4. One iron shaper—Bidder 17, \$307.75; 18, \$380; 23, \$372; 25, \$285 and \$320; 26, \$348 and \$462; 27, \$430; 39, \$465.

Class 5. One pipe threading machine—Bidder 9, \$588; 11, \$942; 13, \$830.85; 17, \$660; 18, \$890; 23, \$900; 25, \$540; 26, \$648; 27, \$544; 28, \$300; 30, \$912.50; 38, \$890; 44, \$495.26.

Class 6. One single punching and shearing machine—Bidder 2, \$1780; 11, \$2587; 18, \$1975 and \$1650; 23, \$1850; 26, \$1847.

Under bids opened July 19 for supplies for the navy yards the Oliver Machinery Company, Grand Rapids, Mich., has been awarded class 39, one combination rip and cross cut sawing machine, \$342.

Under bids opened June 26 for supplies for the navy yards the Ingersoll-Rand Company, New York, has been awarded class 11, three chipping hammers and one chipping, calking and beading tool, \$178.50.

Canadian Preferential Trade.—Canadian commercial opinion on the subject of trade relations within the British Empire found very general acceptance in the Congress of the Chambers of Commerce of the empire that met in London last week. The resolution in which the congress declared for an imperial fiscal policy based on mutual tariff preferences within the empire was proposed by one of the Canadian delegates. It summed up the declarations of the several Canadian boards of trade represented at the congress. Canada's strong leaning toward reciprocity within the empire has had to be reckoned with at every congress that has been held. In spite of the inertia of free trade sentiment, as embodied in the delegates from chambers of commerce in the United Kingdom, Canada's delegates have been able to advance the cause of preference a little further at every meeting. The formula adopted three years ago was fiercely resisted by the free traders. It was not generally expected that so large an additional stride as was made this year was possible. The associated chambers of commerce of the empire are now massed behind Mr. Chamberlain.

A New Steel Wire Plant.—A new plant is about to be established at Buffalo for the manufacture of steel wire which will use machines of an entirely new type for drawing the wire by a continuous process, or through a plurality of dies at one operation instead of through one die for each reduction as is now the practice in wire mills throughout the world. The patents covering this line of machinery are owned by the Iroquois Machine Company, 150 Nassau street, New York, which claims that it can produce wire for less than half the usual cost of labor, and that all wire so produced is of superior quality to that otherwise made. The company now has running in four selected mills in this country and abroad 120 machines, all of which are in constant use, and is building a large order for the Southern Steel Company, of Alabama. Another large independent interest is negotiating for a number of similar machines. The Iroquois Machine Company has just invited prices on 15,000 tons of Bessemer rods, which it is believed are for the new company whose plant will be at Buffalo, N. Y.

Felix Hamburger, 78 Fifth avenue, New York, agent for the sale of the Brunsviga computing and adding machines, has transferred the sole selling right for the sale of these machines in the United States and Canada to Carl H. Reuter, 623 Land Title Building, Philadelphia. While this change has been made Mr. Hamburger continues as heretofore the sole importer of these machines.

Vivian Bond & Co., 68 Beaver street, New York, are offering a full line of ferroalloys, consisting of ferro-silicon, ferromanganese, ferrochrome, ferronickel, ferrotitanium, ferrotungsten and ferrovandium, together with silico-manganese, spiegeleisen, wolfram and other ores.

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HARDWARE

THE relation which the jobbers' catalogues bear to the manufacturers' expense accounts has, during recent years, suggested a good deal of discussion in the trade, especially on the part of the manufacturers, who maintain that as the catalogues issued by the jobbers are a means used by them for the marketing of their goods, the expense of getting them out belongs to the merchants, and not to those from whom they purchase. While the reasonableness of this view of the case is generally admitted, jobbers still not infrequently call upon the manufacturer to pay for the catalogue representation of their products, and in many cases these appeals are yielded to as a matter of policy, though not justified by strict business considerations. There seems, however, to be continual progress in the right direction, as there is not anything like as much of this levying of tribute from the manufacturers as there was some years ago, a result which is due, perhaps, to the jobbers' recognition of the fitness of things and to the dignified position taken by some of the jobbing houses in the premises, as much as to the strenuous opposition of manufacturers to the practice and their refusal to be parties to it.

The recent correspondence in our columns relating to the proposed uniform loose-leaf catalogue of the Southern jobbers marks, however, a distinct advance, inasmuch as it has been explicitly stated by the secretary of the Southern association that the merchants propose to pay for the pages to be furnished by the manufacturers, who shall not be put to any expense in the matter. Coming out openly with this announcement of policy, the association in question is to be congratulated as taking the lead in the promulgation of correct principles in this matter. It would be a further step in the right direction if the association should boldly take the ground that manufacturers should not be called upon in any way to pay for representation in the jobbers' catalogues. It would, however, be a matter for still more gratification if the position taken by the Southern association through its efficient and broad-minded secretary should be followed by the announcement of the adoption of a similar principle and the taking of as dignified a stand by other organizations of jobbers, notably the National Hardware Association, which occupies so commanding a place, and the National Heavy Hardware Jobbers' Association, which has probably seen the impracticability and unwisdom of some of its theories in regard to the compilation of catalogues for its members.

There is evidently getting to be in the country at large an appreciation of the relation of the catalogue houses to the general prosperity, especially in the effect they have upon the cities and villages which are so closely connected with the welfare of the whole people. It is recognized that so far as the retail mail order business succeeds it is principally at the expense of local merchants, some of whom feel to a considerable degree the influence of this competition as a serious menace to their interests. While its damaging effect may to some extent be offset and counteracted by the incentive which it gives to enterprise and wideawake and aggressive methods, there is no doubt that it is exceedingly important for the welfare of the communities throughout the country that the mail order business be kept well within bounds, and every-

thing done to render prosperous the retail merchants in the various lines who occupy so dominant and in fact essential place in the villages and towns in the land. The recognition not only of the disaster that would come to the commercial interests directly affected, but of the injury the country as a whole would suffer if it should be found necessary to give up the existing system of distribution by local merchants, is sure to have a prominent place among the considerations which go to form the judgment of broad and fair minded people, who look at the catalogue house problem entirely apart from any personal business interests they may have, and who regard the question simply in the light of public policy and the general welfare of the rural communities. There is no doubt while the farmer, who is the chief patron of the catalogue houses, might purchase certain articles at lower prices than are charged by the merchants in his village, that in the long run he would be the chief sufferer if the village stores should gradually dry up and disappear under the influence of a competition which they did not and possibly could not successfully meet. This view of the case promises more and more to have influence in forming public judgment, and underlies the admirable remarks of Governor Folk in addressing the retail merchants of Missouri, as referred to in another column. In the same connection we give an illustration of the manner in which enterprising merchants may bring the same argument before their communities and make effective and businesslike appeals for trade.

Condition of Trade.

In connection with the building which is so prominent a feature of the activity which prevails throughout the country and which contributes so directly to the prosperity of the various lines immediately affected it is to be noticed that improvements in and additions to manufacturing plants occupy a noticeable place and indicate the confidence which is felt in the continuance of the existing eminently satisfactory conditions. The fact that most manufacturers have for some time been confronted with a demand for their products to an extent which overtaxes their capacity, involving tardy deliveries in many cases and the necessity for turning down orders in not a few instances, has led to an almost continuous increase in facilities, and new and improved machinery has been steadily introduced into factories and in many cases new buildings erected or important additions made to existing structures. In this way there has been a steady growth in the capacity of manufacturing plants, and the greater volume of trade which is characteristic of the present year has been taken care of far better than would otherwise have been the case. It would seem, however, that the demand grows more rapidly than the means of satisfying it, and the prospect is that during the fall there will be a volume of business which will repeat, some think, in an exaggerated form the experience of the first half of the year, and that it will be hard for merchants to get goods, in some lines at least, promptly and in sufficient quantities to meet their requirements. July certainly is remarkable for the volume of business which characterizes it. The condition of things with retail merchants is also as a rule very satisfactory. The people generally, owing to the employment of labor and the well-being of the farming communities, have money to spend

and are covering their wants liberally. The prices of Hardware and related goods are decidedly firm. A few advances are from time to time announced, but in many instances where no formal advances are made there is the gradual withdrawal of extra concessions and special discounts, giving manufacturers somewhat higher prices, which go to offset the increased cost of material and labor, which cannot be disregarded in a view of the situation. The official figures of the amount of our foreign trade for the last fiscal year, to which we have already called attention, reflect prosperous conditions which promise well for the continued growth of our export relations. While there is no doubt going to be a fierce battle for the possession of foreign markets, in which our manufacturers will find foemen worthy of their steel, the increase in the capacity of our factories and mills and the improved facilities to which we have called attention, will sooner or later not only furnish an incentive for the occupation of foreign fields, but supply the weapons for an aggressive and it is to be hoped a successful meeting of the competition of other countries.

Chicago.

A slight falling off in demand for Hardware products as compared with June is reported by local distributors. Inasmuch as the consumption in agricultural communities has been greatly curtailed on account of the preparations that are being made to harvest the fall crops. This relief from the high tension that has governed trade conditions for months is welcomed by the jobbers, who will now have an opportunity to fill their badly depleted stocks. In the heavier lines, however, trade is brisk and shows no material decline, the inability of the mills to make early deliveries diverting considerable tonnage, which is being shipped from warehouse stocks at premiums. An early announcement of the Wire Cloth schedule is anticipated and there is much speculation as to the basis that will be established, on account of the extremely low prices that have been ruling during the past season. It has been reliably asserted that many of the producers suffered heavy losses on account of the high cost of raw material and the low selling price of the finished product and the enforcement of an advance would certainly be welcomed by these manufacturers. There has been some talk of establishing a central selling agency, but nothing definite in this direction has yet been accomplished. The Stove trade is exceptionally quiet, and no heavy buying on the part of retail merchants is expected before August or September. The early spring trade was very satisfactory in volume, although not in price, and on heaters, notwithstanding the increased cost of Pig Iron, last year's quotations will practically obtain. Lawn Mower manufacturers are already booking heavy orders for next season, and the early buying shows a fair average increase over last year's requirements. The curtailed output of Wire Nails has had the desired effect and prices are being well sustained. Stocks are generally low and no effort will be made to manufacture material for the fall trade until early in August. Bale Tie deliveries are deferred from 30 to 60 days and the requirements are heavier than ever before experienced in the trade. Stocks of Black and Galvanized Sheets are exceptionally low throughout the West, and as the leading manufacturers cannot make shipments on new orders in less than three months, the prospects are not bright for the maintenance of a normal tonnage of assorted sizes in warehouse.

NOTES ON PRICES.

Wire Nails.—While the policy of the mills in restricting output to actual requirements has had a beneficial effect in steadying the market, the lack of accumulated stocks may cause a shortage when fall demand sets in. Reports indicate that the quantities of Nails in jobbers' and retailers' hands are comparatively light. Both in specifications on existing contracts and in contracts for new tonnage the present month thus far better the rec-

ord of a year ago, according to the order books of the leading interest in this line. This condition probably reflects also the experience of the other mills. While concessions of 5 cents per keg on carloads and larger lots are sometimes made the market is steady and firm. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers.....	\$1.85
Carload lots to retail merchants.....	1.90

New York.—The local market is not very active, but demand for small lots from store is seasonable. Quotations for small lots from store are on the basis of \$2.10 per keg.

Chicago.—General conditions in the Wire trade are unprecedented for the summer season and new tonnage booked thus far this month is twice as great as booked during the same period last year. The American Steel & Wire Company's specifications are now averaging 4000 tons a day, and all of this company's idle capacity will be in operation on August 1. The curtailment of the Wire Nail output, while it has strengthened prices, may result in a shortage of stocks to meet the fall trade, which from present indications will be the heaviest in the history of the trade. Stocks in the hands of jobbers and merchants are unusually low and few of the mills have as yet commenced to accumulate material for fall shipment. Price changes which were anticipated in some quarters early in August will not materialize, and on account of the high cost of raw material and the general strength of the entire market an advance rather than a decline would be warranted. Quotations have been reaffirmed, as follows: \$2 in car lots to jobbers and \$2.05 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—We note a fair, seasonable demand for Wire Nails, and the concerted policy of the mills in restricting output to meet actual demand is having a good effect in preventing any accumulation of stocks. The mills are still unable to get a full supply of steel, which continues very scarce and high in price. The tone of the market is fairly strong, but concessions of 5 cents a keg on official prices are sometimes made on carloads and larger lots. Official prices, which are shaded to this extent on desirable orders are as follows: Wire Nails, \$1.85 in carloads to the large jobbing trade and \$1.90 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days.

Cut Nails.—At the meeting of the Cut Nail Association, which is to be held to-day (Wednesday), it is not anticipated that any change will be made in prices. The scarcity and high price of steel is an aid in steadying the market, with the light current demand for Nails, as the mills are largely employed in filling specifications on contract orders. Concessions on official prices of 5 cents per keg, f.o.b. Pittsburgh, are understood to be more or less general. Official quotations are as follows: \$1.80, base, for carload lots, f.o.b. Pittsburgh; \$1.85 for less than carloads, f.o.b. Pittsburgh; \$1.95 for carload lots, on dock, New York; \$2 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

New York.—The requirements of the trade are for immediate necessities only, which results in a light but seasonable demand. Quotations for small lots from store are on the basis of \$2 per keg.

Chicago.—No change in prices is looked for as a result of the meeting of the Cut Nail Association, to be held this week, although considerable strength has developed as a result of the curtailment in production. Demand continues fair, specifications on contracts constituting the bulk of the trading. Quotations are as follows: Steel Cut Nails in car lots, \$1.90 to \$1.95; less than car lots, \$2; Iron Cut Nails, \$2 to \$2.05 in car lots; less than car lots, \$2.10.

Pittsburgh.—A meeting of the Cut Nail Association is

to be held on Wednesday, July 25, but it is not expected that any change will be made in official prices. The market on Cut Nails is firmer, due largely to the scarcity and high prices of steel. New business being placed with the mills is light and they are running mostly on specifications on contracts. We quote Cut Nails at \$1.75, base, f.o.b. Pittsburgh, for carload lots, and \$1.80 in less than carload lots. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

Barb Wire.—Demand from other sources than railroads is light. Some contract orders are being placed for future shipment by large distributors. In some cases concessions on carload and larger lots of 5 cents per 100 pounds are made. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in ten days:

	Painted.	Gal.
Jobbers, carload lots.....	\$2.00	\$2.30
Retailers, carload lots.....	2.05	2.35
Retailers, less than carload lots.....	2.15	2.45

Chicago.—Contracts are already being made by large distributors for their future requirements, but mill shipments, except for railroad consumption, are exceptionally light. Quotations are unchanged and well maintained as follows: To jobbers, Chicago, car lots, Painted, \$2.15; Galvanized, \$2.45. To retailers, car lots, Painted, \$2.20; Galvanized, \$2.50. Retailers, less than car lots, Painted, \$2.30; Galvanized, \$2.60; Staples, Bright, in car lots to jobbers, \$2.10; Galvanized, \$2.40; car lots to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—Demand is largely from the railroads, which have done most of the buying for some time past. Requirements from other consumers are very light and the tone of the market is fairly strong. Official prices continue to be shaded 5 cents per 100 pounds on carloads and larger orders. Official quotations, which are sometimes shaded to this extent, are as follows: Painted Barb Wire, \$2, and Galvanized, \$2.30, in carload lots to the large jobbing trade, with the usual advance of \$1 a ton to retailers in carload lots f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days.

Smooth Fence Wire.—Fence manufacturers are placing heavier contracts for Wire than they did last year. Specifications received by the mills on contract orders are in large volume. Occasionally concessions of 5 cents per 100 pounds are made on desirable orders. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.70
Retailers, carloads.....	1.75

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base.	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized.....	\$0.30	.35	.40	.45	.55	.65	1.05	1.15	

Chicago.—Contracts for requirements running through the last half and in some cases to July 1 next year are being freely made by Fence manufacturers, and this tonnage represents a large portion of the total volume of new business that is being booked by the leading interest. No concessions in prices are being made to the trade, and with the assurance that if any changes are made an advance will be enforced, consumers feel free to cover their future needs. Prices continue to be well maintained, as follows: To jobbers, \$1.85, f.o.b. Chicago, in car lots, and car lots to retailers, \$1.90.

Pittsburgh.—Contracts being placed for Fence Wire by the Fence makers are much heavier than last year, and tonnage entered by the mills shows a heavy gain over this month in 1905. Specifications on contracts are heavy, and output by the mills is greatly curtailed by the shortage in steel. Prices are quite firm, but are occasionally shaded 5 cents per 100 pounds on desirable orders. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.70
Retailers, carloads.....	1.75

The above prices are for base numbers, 6 to 9.

Sewer Pipe.—There is an unconfirmed report in the daily press to the effect that rather than submit to the investigation of the Federal Grand Jury, which has been in session in Jamestown, N. Y., the attorney of the allied companies of the Sewer Pipe combination promised that the combination should be dissolved. It is learned, however, from an official source that nothing has yet been definitely decided regarding the matter by the associated manufacturers, and that meetings will be held in the near future, when the course to be pursued will be determined.

Boxwood Rules.—Under date of July 2, manufacturers of Boxwood Rules revised list prices on certain numbers, such changes having become necessary, we are advised, as the prices on these styles have for a long time been out of proportion to their cost. The following are list prices now in force, which are subject to a regular discount of 60 and 7½ per cent.:

No.	Per Doz.	No.	Per Doz.	No.	Per Doz.
1	\$4.50	53	\$4.50	67¼	\$5.50
2	5.00	53¼	5.00	68	2.50
3	12.00	53½	8.00	68¼	4.50
3½	6.50	53¾	9.00	69	1.75
4	6.50	54	8.75	70	4.00
5	9.50	55	2.50	70¼	6.00
6	20.00	56	3.50	72	5.00
7	11.00	57	6.25	72¼	8.00
11	8.00	57½	7.00	72½	9.00
12	11.00	58	6.50	73	5.00
13	5.50	58½	18.00	73¼	8.00
13½	6.50	58¾	3.00	75	6.00
14	8.00	59	5.25	75½	10.00
14½	7.00	60	10.75	76	10.00
15	15.00	61	3.00	76½	8.50
16	24.00	61¼	5.25	77	6.50
18	4.00	61½	3.25	77¼	10.00
22	5.00	62	8.00	78	10.00
23	7.00	62½	8.00	78½	12.00
24	11.00	63	4.00	79	7.00
26	7.00	63½	4.25	79¼	10.00
27	10.00	64	2.75	79½	7.00
29	2.75	64½	4.50	79¾	11.00
32	7.00	65	2.00	81	8.00
32½	10.00	65½	5.50	82	12.00
36	4.50	66	6.00	83	10.00
36½	6.50	66¼	15.00	83½	12.00
42	4.00	66½	6.00	84	6.50
43	4.00	66¾	15.00	84	26.00
51	3.50	67	3.50		
52	7.25				

Bolts and Nuts.—At the monthly meeting of manufacturers, held last week, no change was made in ruling prices on Bolts and Nuts. The market continues firm and an exceptional volume of business is being done for this season of the year. Nearly all manufacturers are far behind their orders, and complaint of slow deliveries is heard from many quarters. There is every promise that the tremendous consumption will continue, and it is not unlikely that prompt deliveries will command a premium during the coming months.

Hickory Handles.—The growing scarcity of timber of practically all kinds is a fact which is having its effect on the cost of many articles and lines of goods. This condition is influencing the markets for Hickory Handles, although no important changes in price have as yet taken place. A meeting representing nearly all the Hickory Handle manufacturers of the United States and Canada was held at the Southern Hotel, in St. Louis, July 17, at which time the situation was carefully discussed, with the object of securing higher prices and perhaps adopting a uniform advanced list. From statements made at this meeting it appeared that the increase of the price of raw material has amounted to nearly 50 per cent. and the increase in labor to about 15 per cent., while there had been no relative increase in the price of Handles. The general sentiment of the meeting was that vigorous steps must be taken at once to improve the situation, and resolutions were unanimously adopted and committees appointed to formulate plans for improving existing conditions in this industry and placing it on a profit paying basis. It is said that it was shown at this meeting that Hickory manufactured into Handles brings a lower price than when manufactured into any other article.

The Wire Goods Company.—The Wire Goods Company, Worcester, Mass., has issued its discount sheet No. 25, which bears date July, 1906. Revised discounts on a wide range of Wire Goods, together with some

changes in list prices, are thus brought to the attention of the trade.

Cap and Set Screws.—Great difficulty is reported in getting Cap and Set Screws. Stocks are uniformly low, and manufacturers are overwhelmed with orders, some of them being months behind. In view of such conditions prices are naturally firm, and indeed some manufacturers whose quotations are above the market state that they are unable to take care of the business offered them.

Rope.—Demand is in proportion to the requirements of the trade and is referred to as somewhat larger than is usually anticipated at this season. Quotations are as follows: Pure Manila, 12½ cents; B quality, 11½ cents; Pure Sisal, 9 cents; No. 2 quality, 7¼ cents per pound.

Window Glass.—Reports of the annual convention of the Amalgamated Window Glass Workers' Association, which has been held at Cleveland, Ohio, indicate that nothing was done which will help the situation or be of practical benefit to the trade. At this point demand continues restricted. Quotations from jobbers' list in this section are as follows: Greater New York, single, 90 and 5; double, 90 and 10 per cent. discount. Eastern district, except the Boston district, 90 and 10 per cent. discount, for all sizes of single and double strength. In the Boston district quotations are reported as being 90 and 15 for all sizes of single and double strength.

Linseed Oil.—From present indications, prospects for the new seed crop are promising, and a large yield is anticipated, unless damaged by frost or some other climatic conditions. Large buyers would, no doubt, place contract orders for future deliveries at concessions on present prices, but crushers are not yet willing to receipt business on the basis of prospective seed prices for October. Meanwhile demand is light. Quotations are as follows, according to quality and seller: City Raw, 39 to 40 cents per gallon; out of town Raw, 36 to 39 cents per gallon. Boiled Oil is 1 to 2 cents advance per gallon over Raw.

Spirits Turpentine.—Demand is moderate, and the market rather weak at quoted prices. New York quotations are as follows, according to quantity: Oil Barrels, 59½ to 60 cents; Machine Made Barrels, 60 to 60½ cents per gallon.

Delayed Freight Deliveries.

The subject of delays in transportation, it will be remembered, was prominently discussed at the recent meeting of the Southern Hardware Jobbers' Association at Hot Springs, Va., when the matter was brought to the attention of the jobbers and manufacturers in an able address by John Donnan of the W. S. Donnan Hardware Company, Richmond. Since that time Mr. Donnan, in connection with T. P. Giles of the Stephen Putney Shoe Company of Richmond, has been devoting further attention to the matter and conducting an active campaign for the purpose of securing more prompt freight deliveries. In this work Mr. Donnan is acting as chairman of the Southern Hardware Jobbers' Association Committee for Improvement of Railroad Freight Service. These two gentlemen have issued a pamphlet on the subject which has been widely circulated, and they have already received letters of endorsement and promises of co-operation from large firms, corporations and commercial bodies in about 30 States. They have also secured the passage of favorable resolutions by the American Hardware Manufacturers' Association, the Southern Hardware Jobbers' Association and the Southern Wholesale Shoe Dealers' Association.

The pamphlet treats of the facts regarding the movement of interstate shipments, the causes and results of slow deliveries and the remedy suggested. The facts are supported by the following tables. The first shows the rates of movement of freight trains as shown by their working time tables:

Rates of Movement by Interstate Freight Trains as Shown by Their Working Time Table.

	Miles per hour.	Miles per day.
Southern Railway.....	18.35	440.40

Washington Southern—(R. F. & P.)..	22.92	550.08
Seaboard Air Line.....	14.87	356.88
Atlantic Coast Line.....	19.98	479.52
Chesapeake & Ohio.....	15.05	361.20

Average per hour, 18.23; average per day, 437.52.

It is stated that these figures include ordinary stops, but not loss of time at junction points and points where crews are changed.

The second table shows the elapsed time on shipments from Richmond:

Elapsed Time on Shipments from Richmond, Va., in 1906.

Destination.	Date of shipment.	Date of arrival.	Time in transit.		Distance in Miles
			Days.	Miles.	
Ashland, Ala.....	May 8	May 24	16	654	40.8
Leesburg, Ala.....	May 3	May 14	11	735	66.8
Roanoke, Ala.....	May 3	May 14	11	697	63.3
Arkadelphia, Ark....	May 3	May 15	12	1,131	94.2
Millsboro, Del.....	April 25	May 2	7	321	45.8
Plant City, Fla.....	April 24	May 7	13	900	69.2
Louisville, Ga.....	June 6	June 15	9	564	62.6
Eastman, Ga.....	May 5	May 14	9	656	72.8
Henderson, Ky.....	May 10	May 17	7	786	112.2
Olmstead, Ky.....	May 12	May 18	6	797	132.8
Harrodsburg, Ky....	May 8	May 17	9	589	65.4
Covington, La.....	April 26	May 9	15	1,038	69.2
Sunset, La.....	April 24	May 8	14	1,181	70.
Easton, Md.....	April 24	May 1	7	170	24.4
Lake, Miss.....	April 20	May 4	14	960	68.5
Cooleemee, N. C.....	April 23	April 27	4	245	61.2
Norwood, N. C.....	April 24	May 2	8	273	34.1
Mocksville, N. C.....	May 10	May 16	6	245	40.8
Morven, N. C.....	May 3	May 7	4	287	71.7
Smithfield, N. C.....	May 4	May 6	2	106	83.
Clarkton, N. C.....	May 7	May 10	3	318	106.
Marshville, N. C....	April 27	May 2	5	300	60.
Coatesville, Pa.....	May 11	May 19	8	250	31.2
Jeanette, Pa.....	May 3	May 11	8	463	57.8
Prosperity, S. C.....	April 21	April 25	4	432	108.
Coward, S. C.....	May 9	May 12	3	307	102.3
Spartansburg, S. C..	April 28	May 4	6	360	60.
Pacolet, S. C.....	April 27	May 4	7	367	52.4
Marion, S. C.....	May 11	May 16	5	287	57.4
Port Royal, S. C....	April 26	May 1	5	481	96.2
Mason, Tenn.....	April 21	May 1	10	893	89.3
Cookeville, Tenn....	April 21	May 4	13	680	52.3
Rogersville, Tenn....	May 12	May 26	14	415	29.6
Butler, Tenn.....	May 5	May 17	12	385	32.
Naples, Texas.....	April 26	May 19	23	1,243	54.
Woodstock, Va.....	May 9	May 14	5	200	40.
Keysville, Va.....	May 4	May 4	1	73	73.
Black Betsy, W. Va..	April 27	May 7	10	390	39.
Pt. Pleasant, W. Va..	April 25	May 4	9	464	51.5
Williamstown, W. Va.	April 24	May 4	10	553	55.3

Average miles covered each 24 hrs..... 61.61
Average miles covered each hour..... 2.57

The latter table was made from actual shipments with no selection whatever except with a view to covering a sufficient scope of country. No exceptionally slow deliveries nor cases where complaints of delay were made were included. Therefore the figures are believed to show accurately the present actual every-day service. Comparing the results, it is found that with a running time, as shown by the railroads themselves, of 437.52 miles per day, excluding delays at initial and other points, stops at junctions and points where crews are changed, we have actual deliveries averaging 61.61 miles per day. Promises of improvement are not made good, as a similar table of actual shipments compiled in 1903 shows a delivery at the rate of 63.80 miles per day.

Causes of Delay.

The pamphlet remarks that the railroads still give "congestion of traffic, lack of equipment and impossibility of securing it after making contracts," as reasons for delay. These are time worn excuses which have done service for years and can deceive no one. It is pointed out that there seems to be no trouble in promptly delivering perishable goods, which the railroads have to pay for if spoiled in transit. The pamphlet continues:

The real cause, as shown by the figures, is not that the freight trains do not make sufficiently fast time with interstate shipments while running, but they hold goods an unreasonable time at initial points before starting. At every junction, division terminal and transfer point of their own roads, shipments are held up and hampered. When the goods reach transfer points on other roads these delays are more aggravated than ever. The last and most serious delay is caused by jealousy of the railroad systems, one toward the other, and by their attempts to thwart each other's business by each refusing to handle promptly shipments which originated on the other sys-

tem. The consequence of this outrageous practice is a distinct injury and injustice to the consignee, who, in a fight not his own, falls between two fires.

Results.

According to their own working time tables the railroads make on interstate through freight a mileage of 437.57. A deduction of one-fourth to cover necessary delays would seem ample and would leave 338.18 miles per day. As deliveries are only 61.61 miles, they are 5.41 times slower than they should be. In other words, each shipment tabulated in the 1906 table was in the hands of the railroads 7.03 days longer than necessary. Applying this average to the entire country, as may fairly be done, the total loss in the use of commodities, estimated in interest at 6 per cent. of their valuation, aggregates a staggering sum. Moreover, every aggressive distributor of commodities, be he manufacturer or merchant, has his sphere of action circumscribed because of the long time required for his goods to reach customers who would otherwise give him a share of their business.

The Remedy.

To correct these evils it is proposed to penalize the offending party in favor of the injured party, the justice of which principle is recognized by the railroads in collecting demurrage for all delays caused by shipper or consignee. The remedy is referred to as follows:

It is proposed, when there is a sufficient number of business men and organizations enrolled in this cause, to petition our Senators and Representatives in Congress to pass an act enabling the Interstate Commerce Commission to issue a rule to the railroads of the country requiring a reasonable time limit per day of 24 hr. on all interstate shipments, and in default of such time being made on such shipments, the consignee to be entitled to deduct from his freight bill an amount (say 5 or 10 per cent.) for each 24 hr. delay beyond the daily movement fixed by the commission, and in cases of aggravated delay the consignee to be entitled to punitive damages, to be determined by the courts.

In case of delays by flood, fire, accident or providential causes of any character the railroads to be relieved of this rule, provided they notify shipper and consignee promptly of locality and cause of such above described delay and deliver such shipment as promptly thereafter as is possible, and in case a railroad gives other than the true time, place and cause of delay on any shipment a sum, to be fixed by the commission or a court of competent jurisdiction, be paid to consignee by the railroad so offending.

The pamphlet is a forcible and suggestive one and deals with a subject which makes a special appeal to multitudes of manufacturers and merchants.

REQUESTS FOR CATALOGUES, &c.

The trade is given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate.

FROM MASON & ST. HELEN, who have succeeded Mason & Isaacson in the retail business in Madrid, Iowa. The firm handle Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints and Oils.

FROM PERRY HARDWARE COMPANY, Midlothian, Tex., which has succeeded T. C. Perry & Co. and Major & Dees. A retail business is being carried on in Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils and Sporting and Athletic Goods.

FROM THE FULLER-KNATVOLD COMPANY, which has purchased the stock of the Washington Hardware Company, in Tacoma, Wash., and has added to Shelf Hardware, Tinware, Sporting Goods, &c., a line of Stoves, Ranges, Furnaces, Bicycles, &c.

FROM JOHN MACKEY & SON, retail Hardware, Implements, Paints, &c., South Haven, Mich., who are in the market for a stock of Sporting Goods.

FROM COWLEY LUMBER & HARDWARE COMPANY, Cowley, Wyo., which has been incorporated with a capital

stock of \$25,000 to carry on a retail business in Shelf Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting and Athletic Goods.

FROM A. V. SAMMIS, Hardware merchant, Huntington, N. Y., who desires catalogues and quotations relative to Stoves, Ranges, Heaters and Tinnery Tools and Supplies.

PATRONIZING HOME MERCHANT.

IN a notable address to the retail merchants of Missouri in convention at Jefferson City on the 18th inst., Governor Joseph W. Folk declared himself opposed to mail order business and admonished his hearers to advertise freely in their local newspapers. Following is an extract from Governor Folk's address:

We are proud of our splendid cities, and we want them to increase in wealth and population, and we also want our country towns to grow. We wish the city merchants to build up, but we also desire the country merchants to prosper. I do not believe in the mail order citizen. If a place is good enough for a man to live in and to make his money in, it is good enough for him to spend his money.

No merchant can succeed without advertising in one way or another. Patronize your town papers, build them up, and they will build the town up and build you up increased trade and greater opportunities.

In this connection we reproduce below (reduced about one-half) two newspaper advertisements used by the Springfield Hardware Company, Springfield, Ohio, within the past week, the text of which was doubtless suggested by Governor Folk's address:

THE MAIL ORDER CITIZEN!

If your town is good enough to live in—
Good enough to make your money in—
It's good enough to spend your money in
(That's Gov. Jos. Folk—and he knows.)

Does the mail order house trust you?
Do you see the goods before you buy?
Do you send your good money ahead?
And owe your home merchant for a year?
(That's us—and we know.)

Buy Goods in Springfield—Buy Hardware of
The Springfield Hardware Co.

WHAT ABOUT Your Home City?

It's good enough to live in—isn't it?
It's good enough to make your money in—isn't it?
Isn't it good enough to spend your money in?
Do you ask your merchant to trust you for a year or
two or three or more and send the cash to the mail order
house?
Do you see the goods or buy on guess?
Would you buy of your home merchant so?
"Make Springfield flourish"—your Slogan.

Buy Goods of Home Merchants!
Buy Hardware and Tools of

The SPRINGFIELD HARDWARE CO.

These advertisements admirably enforce the Governor's argument, and also effectively illustrate how the merchant can use the publicity columns of his local paper to his own and the newspaper's advantage.

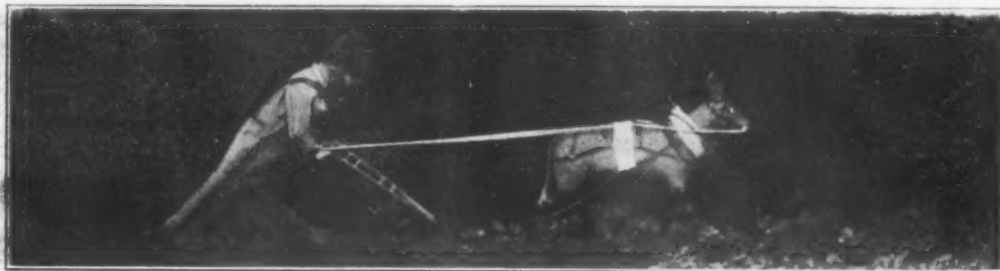
WHAT is probably the largest Plastering Trowel ever turned out was recently made by Henry Disston & Sons, Philadelphia, on an order from a Western jobbing house. The Trowel is 12 x 30 in. in size and perfect in every detail.

TRADE WINNING METHODS.

This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

A MISSISSIPPI WINDOW DISPLAY.

AN exhibit which attracted much attention while it occupied a place in one of the windows of the store of Schwartz & Stewart, Natchez, Miss., is illustrated herewith. The display was the work of E. W. Peale, one of the firm's clerks. Cotton seed had been planted in soil put in the window floor, and the public watched the steady growth with much interest and comment. At the



A Mississippi Window Display.

time the photograph was taken the stalks were about 6 in. in height, illustrating the good work accomplished by the little farmer and his mule and Cultivator.

The mule was equipped with a hand-made cotton Collar, a pair of stiff Wire Hames, lines of Sene Twine and traces of common Iron Jack Chain. A slouch hat, jeans and a checked shirt converted a doll into a thrifty looking agriculturist. The background of the window was of black calico, on which in white paper letters was an intimation that "All Successful Planters Use" the Cultivator a model of which was exhibited in the window.

SELLING OPPORTUNITIES.

IN the July number of *Hardware Hints*, issued by the Logan-Gregg Hardware Company, Pittsburgh, Pa., an interesting article appears entitled "Selling Opportunities," which, on account of its seasonableness and practical character, we give below:

The progressive merchant is always on the lookout for selling opportunities. Buying opportunities will come to you; selling opportunities must be made. It is this side of the business problem—how to sell goods—which deserves and will best repay the greater part of your time and effort.

THE SUMMER SEASON FURNISHES

many such opportunities. In recent years "vacation time" has become the great summer topic. Here is a selling opportunity for the Hardware man. Make it a point to inform your customers that you can supply many of the things necessary for their vacation equipment.

Are they going fishing, hunting or camping? You will be surprised at the wide variety of things you have in stock or can easily get, which are needed for these purposes.

TELL YOUR CUSTOMERS

about them. Nothing stimulates the desire for a thing like seeing it, hearing its merits explained and having the suggestion thrust upon you.

On another page we print a list of items suitable for this purpose. It is intended to prove suggestive rather than as a complete list of everything in this line. You can modify or add to it as your judgment dictates.

The "stay at homes" furnish another selling opportunity. There are many articles in your stock which will add materially to their comfort during the hot weather. Another list will furnish suggestions along this line.

THE PRESERVING SEASON

brings another opportunity. Materials for the use of the housewife should be prominently displayed at this time.

This opportunity lasts only a few weeks and should be vigorously grasped when it arrives.

There is no longer any excuse for a "dull season" for the Hardware man. His stock is now so varied that there is hardly a week passes but a selling opportunity for some particular line presents itself. For example, the hot weather can be turned to good account.

FREE ICE CREAM SERVED

to your customers on a certain day will prove an inexpensive advertisement and one which will bring people into your store and at the same time exploit your leading freezer. Free lemonade on another day will prove attractive and direct attention to this line of goods.

The time spent in planning and executing selling schemes is time well spent. The careful buyer is likely to be a successful merchant, but his success will be moderate unless he is also an enthusiastic and successful seller. "Sell goods," "get a profit"—these should be the mottoes of the trade to-day.

Following is a list of articles which are given by way

of suggestion, as useful and convenient to any one planning a vacation trip or outing:

Alcohol Lamps.	Hammocks.	Rubber Boots.
Baseball Goods.	Hunting Clothing.	Safety Razors.
Cartridges.	Hunters' Hatchets.	Safety Razor Outfits.
Clay Pigeons.	Knives and Forks.	Satchels.
Clay Pigeon Traps.	Lanterns.	Shaving Materials.
Chafing Dishes.	Loaded Shells.	Shot.
Cooking Utensils.	Match Boxes.	Shotguns.
Cork Screws.	Oiled Clothing.	Suit Cases.
Dog Whistles.	Oil Stoves.	Target Pistols.
Fishing Tackle.	Pedometers.	Tents.
Folding Lunch Boxes.	Powder.	Trunks.
Game Calls.	Pocket Compasses.	Trunk Locks.
Game Traps.	Revolvers.	Twine.
Gasoline Stoves.	Revolver Holsters.	Watches.
Gun Cases.	Rifles.	
Gun Implements.	Rope.	

For the comfort and amusement of the "stay at homes" the following articles are mentioned as among the many which will readily occur to the reflective Hardwareman:

Baseball Goods.	Express Wagons.	Lawn Swings.
Bicycles.	Fly Fans.	Lemon Squeezers.
Bicycle Sundries.	Fly Traps.	Quilts.
Croquet Sets.	Hammocks.	Refrigerators.
Cycle Wagons.	Ice Chests.	Roller Skates.
Dog Muzzles.	Ice Cream Freezers.	Tether Tennis.
Dumb Bells.	Indian Clubs.	Thermometers.
Electric Fans.	Lawn Sprinklers.	Velocipedes.

POSSIBLE SCARCITY.

SOME TIME since Geo. C. Pennington, Waverly, Neb., called attention to his line of Fruit Jars in postals to the following effect:

FRUIT JARS MAY BE SCARCE.

They have made a big jump in price since we bought ours. Don't you believe it would be a good idea to anticipate your wants and buy early. At present we have a big supply of

Jars, Jar Rubbers, Extra Caps, Paraffine Wax, Common Sealing Wax, etc., etc.

Favor us with patronage on these goods.

This was doubtless effective in bringing the subject home to his customers, and stirring up those who were likely to need anything in the line to which attention was

called and illustrates a method which may obviously be adopted in connection with the marketing of many kinds of goods.

INDEPENDENCE DAY WINDOW DISPLAY.

JAMES HAMILL, Watervliet, N. Y., used one of his show windows for a Fourth of July display, which was designed to reproduce the Watervliet Arsenal. A fence was constructed from 50d and 60d Wire Nails standing in concrete, the Nails being painted with ebony enamel. The sidewalk was sand, with small squares of cardboard to give the idea of concrete blocks. Grass was manufactured from crepe paper, gravel roofing furnishing the walks. Roadways were of slag, such as used for roofing. Castors and Boston Gem Hoze Nozzles represented guns. The side wall was made up from 0.22 blank Cartridges, the back wall of boxes of 12-ounce Tacks and top of wall with 0.32 short Bullets. The guardhouse was of concrete, a large funnel acting as the roof. The background was an American flag, supported on a small flagpole made from 1/4-in. black Pipe painted white. A small tree was cut and placed in a corner of the window. The other show window at the same time was employed to display Guns and Powder, 20 empty Powder cans also being given a place in the window. A conspicuous sign bore the inscription, "Fourth of July Powder." The exhibit was the work of Kyran A. Fisher, a clerk in the store.

TRADE ITEMS.

THE WOOD SHOVEL & TOOL COMPANY, Piqua, Ohio, closed down its factory for inventory July 3, and started up at full capacity again on the 11th. The plant has never closed down since the company started in business except one week for inventory in July of each year. In order that orders might be filled promptly and to take care of the company's increasing business, the board of directors at its annual meeting on the 20th inst. authorized the erection of additional buildings at once and the installation of more machinery. The plans are drawn for reinforced concrete construction, same as the main building, and contracts have been let for the work.

CHANDELIER & ART BRASS WORKS, Richmond, Ind., has lately increased its capital stock from \$50,000 to \$100,000. Business with the company has been exceptionally satisfactory, especially on its Galvanized Steel Stepladder.

S. H. KINNEY COMPANY will on August 1 succeed to the Hardware business of A. F. Lundblum, 1445 Flatbush avenue, Brooklyn, N. Y. S. H. Kinney of this company has been connected with the Yale & Towne Mfg. Company. It is proposed largely to extend the business.

U. J. ULERY COMPANY, 9 1/2 Warren street, New York, is sending out postals to retail Hardware merchants in the interest of the Napanoch Pocket Knife Tool Kit, which includes reamer, file, saw, chisel and screw driver, in addition to the knife. The company reports the demand for this article as showing constant increase.

H. G. MOORE, who has been secretary and sales manager of the Racine-Sattley Company, Racine, Wis., has resigned his position to become manager of the "Big Four," a combination of Agricultural Implement manufacturing interests, with headquarters at Kansas City, Mo. This organization, which was formed about four years ago, acts as distributing agent for the goods manufactured by its constituent members. The four concerns which belong to the combination are Staver Carriage Company, Chicago; Fish Brothers Wagon Company, Chicago; Thomas Mfg. Company, Springfield, Ohio, and the Grand Detour Plow Company, Dixon, Ill. The latter company took the place of the J. I. Case Threshing Machine Company of Racine, on July 1, the Case Company deciding to withdraw from the combination and market its goods under its own name.

E. B. PAGE, who has been the sales manager for the Bay State Tool Company, Worcester, Mass., has been made general manager of the business.

THE CLEVELAND BUTCHERS' SUPPLY COMPANY, 2315 Pearl street, Cleveland, Ohio, manufacturer of special Butchers' Machinery and Repairs for Hand and Power Meat Choppers, reports a larger volume of business than ever before in its history. The company is shipping its Repairs for Meat Choppers all over the United States.

THE C. H. HALLGATH COMPANY, manufacturers' agent, has opened offices in the House Building, Pittsburgh, Pa., and is placing before the trade lines of goods for use in steel mills, coal mines, quarries, foundries, &c., including trucks and cars for every purpose; Paints for iron work, whether exposed to heat, acid, or sulphur fumes; an efficient hydraulic valve for use in steel mills; Boiler Flue Expanders, Pneumatic Drills and Reamers, &c.

THE July issue of "The Wallace," a little magazine distributed by R. Wallace & Sons Mfg. Company, Wallingford, Conn., in the interest of its Sterling Silver Ware, is enriched with a timely article by Herbert Foster, chief accountant of the company, in which an earnest appeal is made for a higher regard for business principles and morality.

LOGAN & STROBRIDGE IRON COMPANY has removed its plant from New Brighton to Wrightsville, Pa., where it has been consolidated with the Wrightsville Hardware Company. The joint business will hereafter be operated under the name of the Wrightsville Hardware Company.

R. J. HICKEY, formerly salesman for the Columbian Hardware Company, Cleveland, Ohio, is now in charge of the company's Chicago office, 26 Lake street, having succeeded J. C. Neemes.

UNDER the vigorous guidance of President D. D. Lewis the Rex File & Saw Company, Newcomerstown, Ohio, is pushing very rapidly toward completion a factory that will be modern in every detail. The main building is 100 x 46 ft., with an annealing department addition of 18 x 20 ft., and a hardening department of 70 x 32 ft. The machine shop is 20 x 30 ft. The power will be furnished by a 100-hp. steam engine and 70-hp. gas engine. The company will manufacture high grade Hack Saws, Buck Saws, Butchers' Saws, Butchers' Steels and all kinds of Files. The superintendent of the File department is an expert recently secured from Essen, Germany. It is hoped to have the factory in running order by August 15.

THE annual meeting of the Gilbert & Bennett Mfg. Company was held at the home office in Georgetown, Conn., on July 24. The following directors were elected: David H. Miller, Samuel J. Miller, Edward F. Jones, Charles J. Miller, William H. Hunter. Officers were elected as follows: David H. Miller, president and treasurer; Samuel J. Miller, vice-president and secretary; William H. Hunter, assistant secretary; Edward F. Jones, New York manager; Charles J. Miller, Western manager. The usual dividends were declared.

Ewing & Walraven have purchased the stock of B. R. Fishback in Oak Grove, Mo., and have built a wareroom 25 x 50 ft. in size. The firm carries Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils and Sporting Goods.

Caldwell & Hampton have succeeded Caldwell & Benton, Baker City, Ore., in the Shelf and Heavy Hardware, Stove, Tinware, Agricultural Implement, Paint and Sporting Goods business.

Gus Anderson and W. H. Hardy have bought H. H. Fletcher's interest in the H. H. Fletcher Company's store at Forsyth, Mont. They have also bought out the stock of the Forsyth Hardware & Saddlery Company.

J. M. Congleton of Milan, Wash., has purchased the Hardware and Implement stock of the Krupp Mercantile Company at Krupp, Wash.

John McIntosh, Kallispel, Mont., is opening a branch store at Eureka, Mont., having bought the stock of the Frost Mercantile Company at Eureka.

METHOD OF KEEPING CHARGE ACCOUNTS.

A FEW months since A. M. Matthews & Co., Orange, N. J., installed a new system of keeping charge accounts, which after thorough trial has been found well adapted to their use. The most noticeable feature of the system is the fact that it requires no book entries of particular charges or the accounts of individual customers, although affording a complete and comprehen-

[illegible]

Fig. 1.—Portion of Envelope Showing Monthly Account.

sive statement of their accounts at all times. The system is not a substitute for the general bookkeeping necessary to the business as a whole, but merely covers the firm's dealings with its customers, which as a matter of fact might be collected in the general ledger under a single head. If at any time or for any reason it is desirable to enter the customers' accounts in a book they can readily be written up from the data which the system affords.

The Basis of the System

is a series of envelopes, $7\frac{1}{2} \times 5$ in. in size, made of tough Manila paper, and ruled on the front, as shown in Fig. 1. One of these is used for every account, and

[illegible]

Fig. 2.—Charge Slip Kept in Envelope.

they are kept in drawers alphabetically indexed like a card index file. As the envelopes stand on edge in the drawers, customers' names written in the blank space at

the top may easily be run over and the one desired quickly picked out.

The Envelopes Contain Charge Slips.

one of which is shown in Fig. 2, itemizing all goods which a customer has purchased. Every order is written up in a tripling machine, and has a serial number, two series and two colors of paper being used, one for store deliveries and the other for goods sent out by team or messenger. Of the three copies made two go with the goods when goods are sent, so that one may be left with the customer as a bill, and the other is brought back receipted. The third copy is held in the office, and is filed in the customer's envelope at the proper time.

Checking Up.

Every morning the slips for the previous day are collected and the numbers compared. Any omissions, which usually arise from delayed delivery, are noted and looked up to guard against loss or oversight. In practice it has been found convenient to make out a memorandum for each day as reproduced in Fig. 3. This gives the date, the number of the last store delivery, the number of the last outside delivery and underneath the numbers of missing slips to be looked up. The latter, barring accident, would come only in the outside delivery series. The record of the last store and yard slips is kept to show the numbers with which the next day's business should begin. At checking up time all slips are exam-

JUL 5 : 1906

East Store # 3412
" Yard # 2092

2065
2066

Fig. 3.—Memorandum Slip.

ined to make sure that they are dated and figured accurately. They are also footed to save work at the end of the month and then filed in the envelopes.

Monthly Accounts.

We will suppose for purposes of demonstration that the slip dated April 25, illustrated in Fig. 2, is the last issued that month to John Jones, whose envelope is shown in Fig. 1. The method of bringing the account up to May 1 is as follows: First, the total of the month's account is ascertained by adding the amounts of the charge slips which are arranged in order of date and clipped together with the last slip on top. The total—in this case \$27—is entered at the foot of the last slip, as shown in the cut. It is also entered on the debit side of the monthly record on the envelope, Fig. 1. This record shows that the amount of the previous month's account was \$15, the items of which may, of course, be learned from the March charge slips, which will be found clipped together in the envelope. Against this \$15 a payment of \$5 was made on April 5, all cash payments being entered on the credit side of the envelope when made. Mr. Jones having an old debit balance of \$10, this is added to his April account in rendering May 1 statement for what he owes. That statement was rendered for this amount is shown by the entry in the circle which is stamped on the last charge slip, as shown in Fig. 2.

As previously stated, A. M. Matthews & Co. have found the system, as they have applied it to their busi-

ness, both clear and simple and economical of time and labor. It has been effective in preventing misunderstandings on the part of their customers and readily clearing up such differences as have occurred.

MEETING CATALOGUE HOUSE COMPETITION.

THE NORVELL-SHAPLEIGH HARDWARE COMPANY, St. Louis, Mo., will soon mail to the trade its general fall catalogue. This book will embrace not only standard lines of seasonable goods which are purchased by the trade in the fall and winter months, but in addition will offer some attractive values in certain lines of goods upon which the retail trade has had difficulty in competing with catalogue houses. We are advised that in pricing this catalogue on a number of lines of goods special consideration has been given to the competition from which the retail Hardware merchant suffers. At intervals throughout the catalogue red pages are inserted and on these pages will be offered goods that the retail dealer can use for attractive leaders and fighting items. The company states that in consideration of heavy orders for certain items, a number of manufacturers have been willing to part with some of their profit, and the company is thus offering these goods at a very small percentage above their cost. The suggestion is made that if the retail Hardwareman will take these goods and offer them without adding too much profit they will make good advertising material and will attract people to the store.

The point has been raised by many retail merchants when a catalogue is priced opposite each item that it cannot be used in taking special orders, as the consumer in studying the description of the goods in the catalogue will see the prices. The catalogue on this account will be issued in two parts, a large catalogue showing the goods, accompanied by a small price-list, covering all the items in the catalogue. While there may be some objection to this system of pricing, because of the possibility of loss of the pamphlet, it is believed that the objection is more than offset by the advantage of keeping the prices under cover.

This catalogue will be issued about August 15 and will be sent only to legitimate Hardware merchants. As the company's mailing list may not be complete, a copy will be sent to any merchant on application.

In this connection the story which has obtained some circulation that the company meditated going into the wholesale catalogue house business, eliminating salesmen, selling nothing but cheap goods, &c., is emphatically denied as utterly without foundation. The company is represented by more traveling salesmen to-day than ever before in its history, and they will continue to call on the trade regularly as heretofore.

CHICAGO HARDWARE ASSOCIATION PICNIC.

MEMBERS of the Chicago Hardware Association and Hardware merchants, nonmembers of the organization, together with their families and employees, observed Wednesday, July 18, as Picnic Day, and departed from the usual custom of spending the day by taking a boat ride. The new steamer Theodore Roosevelt was chartered for the occasion and the party left Chicago early in the morning for Michigan City, Ind., spending the day in a grove at the latter place. Basket luncheon was served, and the excursionists otherwise commingled for an enjoyable social time. The length of stay in Michigan City being comparatively limited, the usual sports and games with prize awards, which have characterized past picnics of the Chicago Association, were dispensed with on this occasion. Most stores of local Hardware merchants were closed for the day, the lake trip drawing an unusually large crowd and employees being given the benefit of the holiday. W. H. Bennett, George Englehardt, G. R. Lott and W. D. Costello constituted the Arrangement Committee and were in charge of affairs.

THE WEBB WIRE WORKS.

THE WEBB WIRE WORKS, New Brunswick, N. J., has lately undertaken the manufacture of the highest grades of Music and Needle Wires, such as are at present extensively imported. Wires of this quality are in demand in the United States for many purposes, including Music Strings, Spinning Wire, Springs, Brick Cutting and Needle manufacture. The successful making of such Wires requires great care and skill, both in the selection of materials and in the drawing and finishing of the Wire. The Webb Wire Works expects that close attention to these requirements will enable it to produce Wires equal or superior to the best European manufactures. The company states that material has been selected to meet the requirements of each class, and that this material is subjected to a process that will enable it to withstand the uses to which the Wire is put. Imported steel of specified composition is used entirely in the manufacture of the Webb Wires. E. H. Webb, president and manager of the company, was formerly superintendent of the Wire mills of the Trenton Iron Company under the Hewitt management, and later when the plant was bought out by the United States Steel Corporation he was made general superintendent, which position he resigned to take up his present duties. Prior to his engagement with the Trenton Iron Company, Mr. Webb had taken a very thorough course in the metallurgy of iron and steel, with special research work under Professors Sauveur and Richards at Harvard University. The directors of the company, besides Mr. Webb, are S. D. Webb, who is president of China & Japan Trading Company, Limited, of New York City, and Herbert M. Lloyd, treasurer and managing director of the American Paper Goods Company of New York City and Kensington, Conn.

ILLINOIS ASSOCIATION'S IMPRESSIVE GROWTH.

WITH an enrollment of close to 1000 Hardware merchants the Illinois Retail Hardware Association now occupies the premier position among State Hardware organizations in point of membership. So vigorously has the campaign for new members been prosecuted under the supervision of L. D. Nish, Elgin, Ill., secretary, that it seems probable that 1200 of the 1800 Hardware merchants of the State will be affiliated with the association before the next annual convention, which will be held at the Coliseum, Chicago, February 14, 15 and 16. Previous to the opening of the last convention not more than 300 names were carried on the books in good standing, but before the close of the meeting the membership was increased to over 600. The enrollment of new members has since continued at the rate of about 60 a month. The advantages of the mutual fire insurance feature of the association have appealed to many merchants that heretofore displayed no interest in this work, while the growth of the mail order houses and the appreciation of the necessity of organized effort to counteract their baneful influences added many to the ranks. Steps will be taken at the next convention to organize a fire insurance company, and members will be given an opportunity to support their own organization as well as those fostered by associations in other States. The success of the Hardware Show, which will be a feature of this convention, is already assured, and an effort will be made to make this an annual affair. The exposition of Hardware products will surpass all previous efforts in this direction.

THE WM. HENRY & R. E. BELL HARDWARE COMPANY, Fort Worth, Texas, has discontinued its retail department, which has been disposed of to Wm. Henry & Co. The officers of the new concern are A. J. Roe, president; D. C. Campbell, vice-president, and J. A. Corblitt, secretary and treasurer. It will occupy a new four-story brick building on Houston street, between Ninth and Tenth avenues. The new store, which will be one of the most up to date in Texas, will be ready for occupancy by August 1.

Correspondence.

ED. FORD THANKS MR. WEBBER.

To the Editor: Mr. Webber's article in *The Iron Age*, July 19, corrects the wrong impression that has prevailed among manufacturers that the Southern jobbers expected the manufacturers to supply the pages for their loose leaf catalogue free of cost to the jobbers. I hasten to thank the secretary-treasurer for the announcement and trust that he will impress this fact on the members of his association. Some of them in the past have been persistent in making demands upon the manufacturers to contribute toward the issue of their Hardware catalogues.

I was informed that some of the leading jobbers and directing factors of the Southern Association, when shown by manufacturers of various lines the impracticability of one set of illustrations for all, were somewhat surprised, yet left the impression that it was generally expected that the manufacturers would furnish the inserts.

At no time and from no one did I hear of a rumor that the manufacturers were not to be "called on" to contribute, and as this was apparently indorsed by the association, it would carry much more weight when presented even by the individual jobber to the manufacturer than heretofore. The statement of the secretary-treasurer brought a sigh of relief, for he speaks with authority.

In my article of July 5, which Mr. Webber takes exception to, I commended the "one size for all" catalogue and condemned the practice of laying tribute to the manufacturer, which has been done so persistently in the past, under the plea of advertising.

I am told that within the past 90 days one jobber went so far as to send "advance bills" explaining in a diplomatic letter to a manufacturer the great amount of good it would do him to have his wares illustrated in the forthcoming book four months hence, and presuming the manufacturer would be pleased to credit the jobber's account with the amount noted on the bill rendered. It is a delicate matter for some manufacturers to turn down these requests from their largest and most loyal customers, and the jobbers know it and take advantage of the situation. It is nothing more or less than a gentlemanly "hold up."

When the manufacturers learned Mr. Carter had decided to resign the office of secretary-treasurer of the Southern Hardware Jobbers' Association they all regretted the loss they thought it meant to the Southern Association, but when they were apprised that Mr. Webber had been chosen as Mr. Carter's successor they rejoiced to know that so wise a selection has been made for in Mr. Webber they recognized an able, far-sighted, broad-gauged business man, who would continue the good work started by Mr. Carter. Mr. Webber not only has the ability to increase the growth, prestige and individual value of the association, but his Hardware experience will enable him to give practical advice and assistance not only to the association, but to individual members.

Again I thank Mr. Webber for being the first jobber or jobber's representative, to my knowledge, to announce publicly regarding jobbers' catalogues, that "we propose to pay for what we get," and "it never has been our purpose to impose any expense on the manufacturer," and "the jobbers want the convenience of the catalogue and are willing to stand the expense." This is sound business logic and in line with what we have advocated for years.

In regard to who are entitled to enjoy manufacturers' bottom prices, and who are not, this is a question that will not be justly decided during our business career. I was advised that in March of this year a large jobber demanded that manufacturers should not sell a small competitor certain lines the small jobber was about to add, claiming that the small jobber should be treated as a retailer as he had a retail department. This small jobber was ready to buy in the required quantities intended for jobbing, and had ten traveling salesmen on the road all the time soliciting trade in a legitimate way from the

same retail Hardware merchants the large jobbers' travelers did. It is needless to state that the small jobber secured the factory consideration he was justly entitled to.

Determining who is and who is not a legitimate jobber, if left to one class of jobbers or manufacturers, would mean an entirely different list than if left to another class, and the list, if such there was, is not satisfactory to-day to either jobber or manufacturer, and I doubt if it ever will be.

I regret Mr. Webber feels my "chief forte is criticism," but I have always advocated association work both by retailers and jobbers and commented on the great good they have accomplished, but have often criticised what I believed to be mistakes. For instance, it was thought by many that the Catalogue House Committee believed that if all Hardware manufacturers stopped selling the catalogue houses it would put them out of the Hardware trade, and we have often heard during the past two years how the associations had crippled the catalogue houses' Hardware departments. I contended the catalogue houses were not being crippled, and that manufacturers could not keep their goods from them. Referring to my letter in *The Iron Age*, May 10, I said that "Retail associations have done more during the past five years for their members to free them from catalogue house competition than they realize, but not by any means in the manner they appear to think. They have not in any way crippled the retail catalogue houses, even in the Hardware department. They have caused the catalogue houses some inconvenience, but in return the catalogue houses have retaliated. But the associations have succeeded in arousing the retailer to realize the necessity of modernizing his business and working on twentieth century lines."

This statement in regard to the retail catalogue houses' Hardware departments was seriously doubted, and I then little thought an authentic statement would so soon be made proving that the Hardware departments had not only not been crippled but that in the case of the largest catalogue house sales showed an increase in the last year of nearly 60 per cent.

I have not criticised with the intention of injuring but rather helping and showing the trade the error of their ways, as I saw it, for I love the Hardware people and wish them well, and trust that they will take my criticisms in the same kindly spirit in which they are given.

ED. FORD.

THE ENTERPRISE MFG. COMPANY.

IN view of the fact that efforts have been made to sell to the Hardware trade specialties of various brands with the statement that they were made in the works of the Enterprise Mfg. Company, Philadelphia, with the skilled labor and high standards that have given the Enterprise goods their reputation, the company desires emphatic announcement made that it is its invariable rule not to manufacture specialties under any other name than its own.

Goods otherwise marked, which are offered with the claim that they were made in the Enterprise Works, they refer to as sailing under false colors, as all goods made by the company bear the well-known trademark "Enterprise."

At the last regular monthly meeting of the Board of Directors of the Frost & Wood Company, Limited, manufacturer of Agricultural Implements, Smith's Falls, Ont., Charles B. Frost, president and general manager of the company, resigned his position as general manager and R. J. Whyte, who for some time past has been assistant general manager, was elected to the position of general manager. Mr. Whyte has been with the company for the past 16 years and during that time has risen from post to post, until now he directs the affairs of one of the largest industrial concerns in Canada. This last promotion is a well deserved tribute to the ability of Mr. Whyte, both in his mastery of the details of a large business and of his close attention to the best interests of the company.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us copies of catalogues, price-lists, &c., for our catalogue department in New York; and at the same time to call attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

THE UPSON NUT COMPANY, Cleveland, Ohio: Revised list of Boxwood and Ivory Rules, which went into effect July 1.

ATHOL MACHINE COMPANY, Athol, Mass.: Catalogue No. 30, relating to Vises, Grindstone Frames, Machinists' Tools, Meat Choppers and Presses, Animal Tethers and Castings.

ECONOMY DRAWING TABLE COMPANY, Toledo, Ohio: Catalogue devoted to Drawing Tables, Sectional Filing Cases, &c., for the use of architects, contractors, manufacturers, colleges, technical schools, manual training schools, artists, &c.

WM. WARNOCK COMPANY, Sioux City, Iowa: Catalogue No. 15 devoted to Galvanized Steel Tanks and Specialties, Motor Sundries and Supplies and Tools and Accessories for motor cars.

JOHN H. GRAHAM & Co., 113 Chambers and 95 Reade street, New York: New pages for insertion in their general catalogue.

COLUMBIA WIRE CORDAGE COMPANY, Hyde Park, Mass.: Price-list of Wire Picture Cord, which went into effect July 10 and has been generally adopted by the manufacturers.

THE AMERICAN METAL WHEEL & AUTO COMPANY, Toledo, Ohio: Supplemental Auto catalogue, devoted to the American line of Wheel Steer Juvenile Automobiles.

BALDWIN, TUTHILL & BOLTON, Grand Rapids, Mich.: Catalogue relating to Saw and Knife Fitting Machinery and Tools, including Knife Grinders, Knife Balancing Machines, Band Saw Braziers, Band and Circular Rip or Resaw Sharpeners, &c.

BAY STATE TOOL COMPANY, Worcester, Mass.: Pamphlet illustrating and describing the Bay State Interchangeable Ratchet and Socket Wrench.

THE WHITMAN & BARNES MFG. COMPANY, Chicago, Ill.: Booklet relating to the W. & B. line of Lawn Mowers for 1907. New patterns of W. & B. Junior and W. & B. Junior Ball Bearing Mowers are shown, as well as detailed views of special reel adjustments, three-pawl ratchet and special ball bearing adjustments.

A. B. FARQUHAR COMPANY, York, Pa.: Fiftieth annual catalogue devoted to Grain Drills, Corn Planters, Cultivators, Plows, Harrows, Corn Shellers, Feed Cutters, Cider Mills, Stump Pullers, Trucks, &c.

THE PITTSBURGH AUTOMATIC VISE & TOOL COMPANY, Pittsburgh, Pa.: Catalogue No. 50 relating to the Long Patent Universal Double and Single Swivel Vises, several patterns of which are illustrated.

PARLIN & ORENDORFF COMPANY, Canton, Ill.: Catalogue No. 64 relating to Plows, Harrows, Listers, Planters, Cultivators, Stalk Cutters, Beet Tools, Potato Diggers, Carts, &c.

TEXAS DISC PLOW COMPANY, Dallas, Texas: Catalogue relating to Rotary Disk Plows.

FERDINAND DIECKMANN, Cincinnati, Ohio: Catalogue devoted to Conductor Elbows and Shoes manufactured in light and heavy gauges of galvanized, charcoal, copper,terne, old style, redipped and bright tin.

POMONA TERRA COTTA COMPANY, Pomona, N. C.: Catalogue relating to Standard Vitrified Salt Glazed Shale Sewer Pipe, Double Strength Railroad Culvert Pipe, Terra Cotta Flue Pipe, Terra Cotta Well Tubing, Flue or Chimney Linings, Farm Drain Tile, &c.

PHENIX HARDWARE MFG. COMPANY, Homer, N. Y.: Illustrated catalogue devoted to Vises, Saw Vises, Pipe Vises, Sash Chain Fixtures, Plumbers' Chains, Clamps, Hammers, Hatchets, Curry Combs, Spiral Screw Drivers, Fruit and Vegetable Parers, &c.

MASBACH HARDWARE COMPANY, 84 Warren street, New York: Supplement for insertion in its 1904 catalogue. Pages 133-149 represent goods which have since been added to the company's line. Pages 150-160 give discounts applying to the entire line.

SILVER & Co., 304-314 Hewes street, Brooklyn, N. Y.: Catalogue No. 16, relating to Housefurnishing Goods and Bath Fixtures.

THE LOWELL SPECIALTY COMPANY, Lowell, Mich.: Catalogues showing Cream Separators, Fountain Compressed Air Sprayers, Washing Machines, Tank Sprayers, &c.

AMERICAN SEWER PIPE COMPANY, Pittsburgh, Pa.: Catalogue devoted to Sewer and Culvert Pipe, Flue Linings, Paving Brick, Fire Brick, Fire Clay and kindred products.

THE FORBES SILVER COMPANY, International Silver Company, successor, Meriden, Conn.: Catalogue relating to Silver Plated Hollow Ware, Waiters, Crumb Trays, Cake Baskets, Prize Cups, Baking Dishes, Hotel Ware, Toilet Ware, Forks, Knives, Spoons, &c.

W. S. DICKEY CLAY MFG. COMPANY, Kansas City, Mo.: Leaflet of Standard Vitrified Salt Glazed Sewer Pipe, Fire Clay Chimney Pipe, Wall Coping, Flue Linings, Farm Drain Tile, Well Tubing, Sewer Pipe Fittings.

THE SPANGLER MFG. COMPANY, York, Pa.: Catalogue illustrating Grain and Fertilizer Drills, Corn Planters, Fertilizer Distributors, Weeders, Feed Cutters, Corn Shellers, Cultivators, Harrows, Kindling Wood Splitting Machines, Saw Mills, Ice and Refrigerating Machines, &c.

AMONG THE HARDWARE TRADE.

Dinkins & Davidson Hardware Company, Atlanta, Ga., succeeding Dinkins & Davidson, have been incorporated with a capital stock of \$200,000. The incorporators are S. C. Dinkins, E. A. Davidson, Lawson Davidson and Mark Palmour.

The Hawley Hardware Company, Bridgeport, Conn., has been incorporated in Connecticut to carry on a wholesale and retail Hardware business. The capital stock is \$15,000, and the incorporators are Joseph H. Stagg, Herbert Bottomly, Charley Lindquist and Charles A. Benson.

The Brenfodder Hardware & Iron Company, Cincinnati, Ohio, has been incorporated with a capital stock of \$30,000 by Joseph Willy, Robert Ramsey, George P. Stimson, W. D. Breed and Smith Hickenlooper.

Western Hardware and Implement Company has purchased the stock of Carlson Bros., in Mohler, Idaho. The company carries a retail stock of Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Paints and Oils.

R. W. Curtis will open a Hardware store at 1215 Main street, Bridgeport, Conn. Mr. Curtis has had 25 years' experience in the Hardware business in Bridgeport, first with T. Hawley & Co., and later with C. W. Hawley.

Chandler & Sellwood is the name of a new Hardware firm which has begun business at 495 State street, New Haven, Conn. The members of the firm are Frank F. Chandler, until recently with the Winchester Repeating Arms Company, and William H. Sellwood, who has been a clerk in the Hardware store of the Lightbourn & Pond Company, New Haven.

The Bay State Lightning Clamp.

The feature of the Bay State Lightning clamp, shown herewith, is the quick adjustment, which is obtained by means of an eccentric nut, through which the screw passes. The screw is of slightly less diameter than the nut, so that when the nut is turned by means of the butterfly handle the screw slides easily. When the eccentric is brought around to seize the thread of the screw

the clamp acts like any other. The screw is so loose when released by the nut that it slides by gravity. The body of the clamp is double ribbed throughout and consequently cannot get out of alignment. The tool is made in two sizes, 3 and 5 in. The clamp is put on the market



The Bay State Lightning Clamp.

by the Bay State Tool Company, 98-100 Beacon street, Worcester, Mass., who will add a few larger sizes to the line in the near future.

The Young Micanite Canopy Insulator.

Mica Insulator Company, 218 Water street, New York, is offering the canopy insulator shown in the accompanying cuts. It is made up from large laminations of mica and molded with both flange and taper into one solid

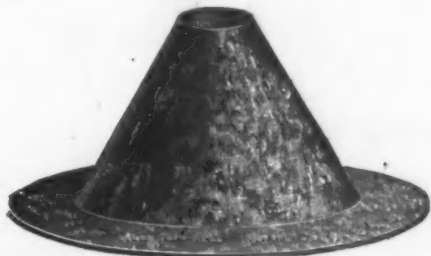


Fig. 1.—The Young Micanite Canopy Insulator.

whole. In Fig. 2 a fixture is shown insulated with the canopy. The insulator is designed to overcome danger from fires where wires project through a floor or wall and make connection with the wires of the electrolier. The flange of the insulator also gives protection to the brass canopy from the surface of the ceiling or wall, re-

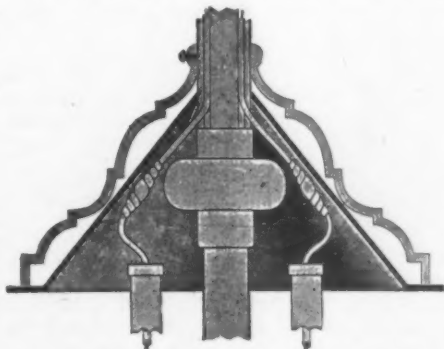


Fig. 2.—Fixture Insulated with the Canopy Insulator.

moving any possibility of a short circuit between the two conducting wires, between either of the conducting wires and the canopy, or between the wires through the canopy to the ceiling. The device, it is remarked, has been approved by the National Board of Fire Underwriters.

Waupun Water Motor.

The Althouse-Wheeler Company, Waupun, Wis., is offering water motors, as shown herewith. They are made in sizes ranging in power from that of a sewing machine up to 10 hp. or more. The power of the motors depends upon the water pressure, as, for instance, if the pressure from water works in a city or town is from 25 to 50 pounds to the square inch, the No. 0 motor, the smallest the company makes, will develop $\frac{1}{8}$ hp., while with a

pressure of from 50 to 100 pounds the same motor develops $\frac{1}{4}$ hp. The motors are referred to as powerful and durable, giving power that can be instantly applied, and are so simple that they can be operated by any one. Among points of excellence the following are mentioned: That compared with steam engines, the first cost is less; that they cannot freeze up, that they make no dirt or noise, and that they take up very little floor space. The motors are especially designed to give every ounce of power that can possibly be obtained from the water used. They are alluded to as first class in make and finish, having iron



Waupun Water Motor.

cases and steel shafts, with adjustable bearings to take up wear. The motors are adapted to driving ice cream freezers, jeweler's and dental lathes, dynamos for electric lights, scroll saws, telephone generators, coffee roasters, meat cutters, washing machines, sewing machines, coffee and spice mills, exhaust fans and blowers, &c.

Parker Glass Salt Shakers.

The Charles Parker Company, Meriden, Conn., and 32 Warren street, New York, has recently put on the market a group of glass salt shakers, the patent rights of which have recently been acquired by the company. The illustration herewith reproduces one of several styles and patterns, about two-thirds actual size, there being both pressed and genuine cut glass bodies, in shapes that include squares, hexagons, octagons, inner curved sides



Parker Glass Salt Shaker, No. 100.

with wider bottoms, &c. The practical and novel characteristic of these shakers, made alike for salt and pepper for uniformity, the latter with smaller holes at top, is the fact that in effect they are entirely glass, thus avoiding the risk of corrosion and formation of verdigris through contact of salt with metallic substances containing copper. At the top is a flanged glass disk, through which holes are drilled, the nicked screw ring simply serving to keep the glass surfaces firmly together and by contrast improving the appearance.

Disston's New Saw Frames.

Henry Disston & Sons, Philadelphia, Pa., are introducing the saw frames shown in the accompanying cuts. The hack saw frame, Fig. 1, is adapted to blades from 8 to 12 in., adjustable to half inches. The frame is of

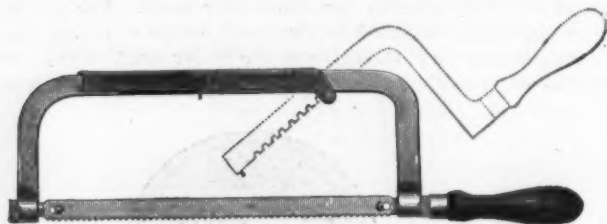


Fig. 1.—Improved Adjustable Hack Saw Frame, No. 31.

forged steel, with solid forged sockets and polished hardwood handle. The parts will not fall out while readjusting. The depth from the inside of the frame to tooth edge of the blade is $3\frac{3}{8}$ in. The frames are furnished polished or nickel plated. The frame shown in Fig. 2 has a pressed steel handle. The back is flat,



Fig. 2.—Pressed Steel Handle Saw Frame, No. 30.

with a round edge, and is $\frac{3}{4}$ x 1 in. in size. The depth from the inside center edge to the tooth edge of the blade is $5\frac{1}{2}$ in. A clock spring blade is furnished $\frac{1}{2}$ in. wide, fastened with a screw in the front end.

The Bay State Interchangeable Ratchet and Socket Wrench.

The interchangeable ratchet and socket wrench shown in the accompanying illustrations is manufactured by the Bay State Tool Company, 98-100 Beacon street, Worcester,

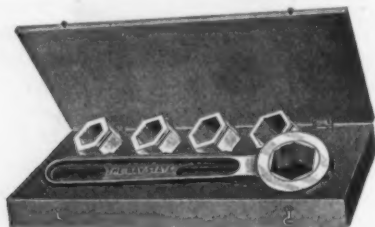


Fig. 1.—The Bay State Interchangeable Ratchet and Socket Wrench.

Mass., and is an extension of the line of ratchet wrenches which has been described in these columns. By means of interchangeable bushings five sizes of wrenches are obtainable in one. By reversing the bushing when in-



Fig. 2.—The Tool Used as a Socket Wrench.

serting in the wrench, a socket wrench is obtained. Two sizes of sets are included in this line, set No. 2 consisting of a wrench with a $1\frac{1}{2}$ -in. hexagonal opening, and the four bushings, with openings of $\frac{3}{4}$, $\frac{11}{16}$, $\frac{7}{8}$ and 1 in. Set No. 3 consists of a wrench with $1\frac{3}{4}$ -in. hexagonal opening and four bushings, with openings of $1\frac{1}{8}$, $1\frac{1}{4}$, $1\frac{1}{2}$ and $1\frac{3}{4}$ in. Fig. 2 shows the tool used as a socket wrench.

The Clauss Automatic Strop.

The automatic razor stropper shown in the accompanying cuts is put on the market by the Clauss Shear Company, Freemont, Ohio, U. J. Ulery, New York repre-

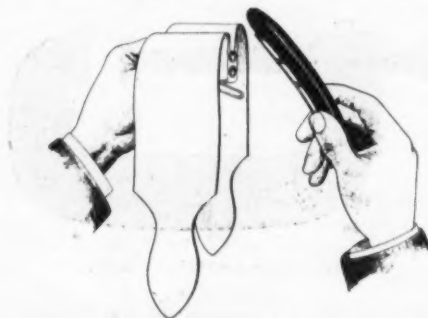


Fig. 1.—Clauss Automatic Strop.

sentative, 7-9 Warren street. As illustrated in Fig. 3, it consists of a polished metallic case $3\frac{1}{2}$ in. wide, with a leather strop passing over a roller in the case. A wire

loop at the top of the case permits it to be hung on a hook or nail. Fig. 1 indicates how the machine is held in the left hand, with the strop hanging on either side. The razor is held closed, and the back of the blade is inserted in a tube in the case, designed for this purpose, as



Fig. 2.—Placing Razor in Strop.

shown in Fig. 2. The razor is pushed in until the blade strikes the end of the machine, thus freeing the handle from the blade, when the handle is thrown back, ready for stropping, as in Fig. 3. The stropper is then hung in a convenient place, and the operator takes the ends of the strop, one in each hand, and moves them backward and forward alternately. The roller and tube are so arranged



Fig. 3.—Razor Open and Ready for Stropping.

that first one side of the razor blade and then the other is automatically presented to the strop as it is moved backward and forward. It is pointed out that it is not necessary for the operator to know how to strop a razor to use the stropper successfully and insure a fine edge.

Lyman Rear Sights.

The Lyman Gun Sight Corporation, Middlefield, Conn., is offering new rear sights, as illustrated herewith. The feature of the combination rear sight, shown in Figs. 1 and 2, is that while folding it can be locked and reliably



Fig. 1.—Lyman Improved Combination Rear Sight, Locked.

held in exact position for shooting. It is explained that the sight can be instantly and easily locked whenever desired, regardless of the position of the rifle; that it cannot be locked except in the correct position, and that when locked it can be freely carried through the woods

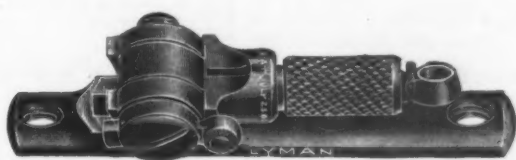


Fig. 2.—Combination Rear Sight Folded Down.

without risk of knocking it out of exact position. The rear sight for Mauser rifles, shown in Fig. 3, is alluded to as very accurate and easily adjusted. The base is especially constructed to render it easy to attach to the bolt stop. The bolt stop is removed to attach the sight

to the rifle and the base put over it, when enough is cut away from the edge of the rifle stock to allow replacing

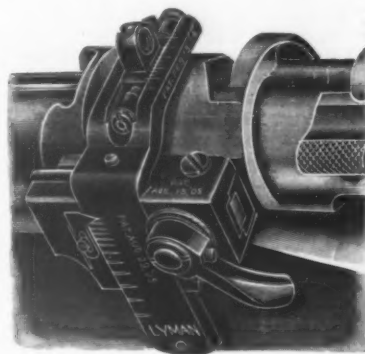


Fig. 3.—Lyman Patent Rear Sight for Mauser Rifle.

the bolt stop with the base. A special front sight is required for use with this rear sight.

Stop-A-Leke Styck.

The Phillip Carey Mfg. Company, Lockland, Cincinnati, Ohio, is offering Stop-A-Leke Styck, as shown herewith. This elastic compound in stick form is designed for stopping leaks of every description in tin, iron, steel, felt, gravel, slate, tile or shingle roofs; also leaks in eavestroughs, around skylights, dormer windows, scuttles, pipes, wooden or iron tanks, boats, &c. No heating of the compound is necessary and it is always ready for



Stop-A-Leke-Styck.

use. Particles of dust or dirt around the leak should be brushed or scraped away, after which the compound is rubbed into the leak and the aperture filled up by the use of a putty knife, small trowel or similar tool. The company states that the compound will not dry out or become brittle, even if kept for years, that it can be used at any season of the year and in all climates, as it is unaffected by extreme of heat or cold, and that one stick will repair hundreds of leaks.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

Linseed, City, raw.....	39	@40
City, Boiled.....	40	@41
State and Western, raw.....	37	@38
Raw Calcutta Seed.....	68	@69
Lard, Extra Prime, Winter.....	70	@71
Extra No. 1.....	53	@55
No. 1.....	41	@43
Cotton-seed, Crude, f.o.b. mills.....	37 1/2	@38
Summer Yellow, Prime.....	37 1/2	@38
Summer Yellow, off grades.....	36	@37
Sperm, Crude.....	53	@54
Natural Spring.....	62	@63
Bleached Spring.....	63	@64
Natural Winter.....	63	@64
Bleached Winter.....	66	@67
Bleached Winter, Extra.....	68	@69
Tallow, Prime.....	51	@52
Whale, Crude.....	32	@33
Natural Winter.....	43	@44
Bleached Winter.....	45	@46
Extra Bleached, Winter.....	47	@48
Menhaden, Brown, Strained.....	26	@27
Light, Strained.....	27	@28
Bleached, Winter.....	27	@28
Extra Bleached, Winter.....	27	@28
Southern.....	27	@28
Cocoonut, Ceylon.....	74	@75
Cochin.....	74	@75
Cod, Domestic, Prime.....	30	@31
Newfoundland.....	35	@36
Red, Elaine.....	36	@37
Red, Saponified.....	44	@45
Olive, Italian, bbls.....	54	@55
Neatfoot, Prime.....	48	@49
Palm, Logos.....	10	@11

Mineral Oils—

Black, 29 gravity, 25@30 cold test.....	10 1/2	@11 1/2
29 gravity, 15 cold test.....	11 1/2	@12 1/2
Summer.....	10 1/2	@11 1/2
Cylinder, light filtered.....	18	@19
Dark filtered.....	16	@17
Paraffine, 903-907 gravity.....	13 1/2	@14
903 gravity.....	12 1/2	@13
903 gravity.....	10 1/2	@11 1/2
Red.....	12 1/2	@13
In small lots 1/2¢ advance.		

Miscellaneous—

Barytes:		
White, Foreign.....	1 ton	\$17.50@19.00
Amer. floated.....	1 ton	19.00@20.00
Off color, No. 2.....	1 ton	13.50@15.00
Chalk, in bulk.....	1 ton	3.00@3.25
In bbls.....	100 lb	35
China Clay, English.....	1 ton	11.00@17.00
Cobalt, Oxide.....	100 lb	2.50@2.60
Whiting, Common.....	100 lb	1.35@1.45
Gilders.....	100 lb	.50@.55
Ex. Gilders.....	100 lb	.55@.60
Putty, Commercial—	100 lb	
In bladders.....	1.70	@1.85
In bbls. or tubs.....	1.20	@1.40
In 1 lb to 5 lb cans.....	2.65	@2.95
In 12 1/2 to 50 lb cans.....	1.50	@1.90
Spirits Turpentine—	gal.	
In Oil bbls.....	59 1/2	@60
In machine bbls.....	60	@60 1/2
Glue—	lb	
Cabinet.....	11	@15
Common Bone.....	7	@9
Extra White.....	18	@24
Foot Stock, White.....	11	@14
Foot Stock, Brown.....	5	@8
German Hide.....	12	@18
French.....	10	@10
Irish.....	13	@16
Low Grade.....	9	@12
Medium White.....	14	@17
Gum Shellac—	lb	
Bleached Commercial.....	43	@47
Bone Dried.....	53	@57
Button.....	40	@45
Diamond I.....	54	@55
Orange.....	50	@52
A. C. Garnet.....	246	@248
D. C.....	58	@60
Octagon B.....	62	@64
T. N. O.....	47	@48
V. S. O.....	55	@56
Colors In Oil—	lb	
Black, Lampblack.....	12	@14
Rine, Chinese.....	30	@36
Blue, Prussian.....	32	@36

Blue, Ultramarine.....	13	@16
Brown, Vandyke.....	11	@14
Green, Chrome.....	12	@16
Green, Paris.....	12	@16
Sienna, Raw.....	12	@15
Sienna, Burnt.....	12	@15
Umber, Raw.....	11	@14
Umber, Burnt.....	11	@14

White Lead, Zinc, &c.—

Lead, English white, in Oil, 9 1/2 @ 9 3/4		
Lead, American white, in Oil:		
Lots of 500 lb or over.....	7 1/2	@7 1/2
Lots less than 500 lb.....	7 1/2	@7 1/2
In Barrels.....	6 1/2	@6 1/2
Lead, White, in oil, 25 lb tin		
pails, add to keg price.....	1/2	@ 1/2
Lead, White, in oil, 12 1/2 lb tin		
pails, add to keg price.....	1	@ 1
Lead, White, in oil, 1 to 5 lb		
ass'ted tins, add to keg price.....	1 1/2	@ 1 1/2
Lead, American, Terms: For lots 12		
tons and over 1/2¢ rebate; and 2% for		
cash if paid in 15 days from date of		
invoice; for lots of 500 lbs. and over		
2% for cash if paid in 15 days from date		
of invoice, for lots of less than		
500 lbs. net.....	10	@10
Lead, White, Dry, in bbls.....	5 1/2	@5 1/2
Zinc, American, dry.....	5 1/2	@5 1/2
Zinc, French:		
Antwerp, Red Seal, dry.....	8 1/2	@8 1/2
Antwerp, Green Seal, dry.....	10 1/2	@10 1/2
Paris, Red Seal, dry.....	9 1/2	@9 1/2
Paris, Green Seal, dry.....	10 1/2	@10 1/2
Zinc, V. M. French, in Poppy Oil:		
Green Seal:		
Lots of 1 ton and over.....	12 1/2	@13 1/2
Lots of less than 1 ton.....	12 1/2	@13 1/2
Zinc, V. M. French, in Poppy Oil:		
Red Seal:		
Lots of 1 ton and over.....	11 1/2	@12 1/2
Lots of less than 1 ton.....	11 1/2	@12 1/2
Discounts—French Zinc—Discounts		
to buyers of 10 bbl. lots of one or mixed		
grades, 1%: 25 bbls., 2%: 50 bbls., 4%:		

Dry Colors—

Black, Carbon.....	5	@10
Black, Drop, American.....	4	@6
Black, Drop, English.....	5	@15

Black, Ivory.....	16	@20
Lamp, Com.....	4 1/2	@6
Blue, Celestial.....	4	@6
Blue, Chinese.....	29	@32
Blue, Prussian.....	27	@30
Blue, Ultramarine.....	4 1/2	@15
Brown, Spanish.....	1 1/2	@1
Carmine, No. 40.....	33.10	@32.20
Green, Chrome, ordinary.....	3 1/2	@6
Green, Chrome, pure.....	17	@25
Lead, Red, bbls., 1/2 bbls. and kegs:		
Lots 500 lb or over.....	7 1/2	@7 1/2
Lots less than 500 lb.....	7 1/2	@7 1/2
Litharge, American, bbls.....	7 1/2	@7 1/2
Ocher, American.....	1 ton	\$8.50@16.00
American Golden.....	2 1/2	@3 1/2
French.....	1 1/2	@2 1/2
Foreign Golden.....	3	@4
Orange Mineral, English.....	10	@12
French.....	10 1/2	@12
German.....	8 1/2	@10
American.....	8 1/2	@8 1/2
Red, Indian, English.....	4 1/2	@8 1/2
American.....	3	@3 1/2
Red, Turkey, English.....	4	@10
Red, Tuscan, English.....	7	@10
Red, Venetian, Amer.....	100 lb	\$0.50@1.25
English.....	100 lb	\$1.15@1.75
Sienna, Italian, Burnt and		
Powdered.....	3	@9 1/2
Italian, Raw, Powdered.....	3	@6 1/2
American, Raw.....	1 1/2	@2
American Burnt and Pow.....	1 1/2	@2
Talc, French.....	1 ton	\$17.00@25.00
American.....	1 ton	17.00@25.00
Terra Alba, French.....	100 lb	\$0.90@1.00
English.....	100 lb	\$0.90@1.00
American.....	100 lb	\$1.75@2.00
American.....	100 lb	\$2.40@2.65
Umber, T'her, But. & Pow.....	2 1/2	@3 1/2
Turkey, Raw and Powdered.....	2 1/2	@3 1/2
Burnt, American.....	1 1/2	@2
Raw, American.....	1 1/2	@2
Yellow Chrome.....	12	@14
Vermilion, American Lead.....	19	@25
Quicksilver, bulk.....	65	@65
Quicksilver, bags.....	66	@66
English, Import.....	65	@70
Chinese.....	50.90	@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33% @ 33% & 10% signifies

that the price of the goods in question ranges from 33% per cent. discount to 33% and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1906, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Domestic, # doz. \$3.00.....33%
North's.....33%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition—See Caps, Car-

tridges, Shells, &c.

Anvils—American—

Eagle Anvils.....# lb 6% @ 7%
Hay-Budden, Wrought.....# lb 6% @ 7%
Horseshoe Brand, Wrought.....# lb 6% @ 7%
Trenton.....# lb 6% @ 7%

Imported—

Peter Wright & Sons, # lb. 84 to 340
lb. 11% to 350 to 600 lb. 11%
Anvil, Vise and Drill—
Millers Falls Co., \$18.00.....15% to 10%

Apple Parers—See Parers,

Apple, &c.

Aprons, Blacksmiths'—

Livingston Nail Co.....33% to 34%

Augers and Bits—

Com. Double Spur.....75% to 75%
Jennings' Patn., reg. finish.....50% to 60%
Black Lip or Blued.....60% to 10%
Boring Mach. Augers.....70% to 10%
Car Bits, 12-in. twist.....60% to 10%
Ford's Auger and Car Bits.....40% to 5%
Forster Pat. Auger Bits.....25%
O. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list.....25%
No. 30, R. Jennings' list.....40%
Russell Jennings' Pattern.....25% to 42%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Millers Falls.....50% to 60%
Ohio Tool Co.'s Bailey Auger and
Car Bits.....60% to 10%
Pugh's Black.....35%
Pugh's Jennings' Pattern.....25%
Snell's Auger Bits.....60%
Snell's Bell Hangers Bits.....60%
Snell's Car Bits, 12-in. twist.....60% to 10%
Wright's Jennings' Bits.....50%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Clark's small, #18; large, #36.....50% to 10%
Clark's Pattern, No. 1, # doz. \$2.
No. 2, #18.....35%
Ford's, Clark's Pattern.....60% to 5%
O. E. Jennings & Co., Steer's Pat.....25%
Swan's.....60%

Gimlet Bits—

Common Dble. Cut.....\$3.00 @ \$3.25
German Pattern, Nos. 1 to 10,
\$1.60; 11 to 15, \$5.75

Hollow Augers—

Bonney Pat., per doz. \$5.50 @ \$6.00
Ames.....25% to 10%
Universal.....20%
Wood's Universal.....25%
Ship Augers and Bits—
Ship Augers.....\$5.50 @
Ford's.....35% to 5%
O. E. Jennings & Co.:
L'Hommedieu's.....15%
Watrous.....35% to 5%
Ohio Tool Co.'s.....40%
Snell's.....40%

Awl Hafts—See Handles,

Mechanics' Tool.

Awls—

Brad Awls:
Handled.....gro. \$2.75 @ \$3.00
Unhanded, Shlided.....gro. \$3.00 @ \$3.50
Unhanded, Patent.....gro. \$3.00 @ \$3.50
Peg Awls:
Unhanded, Patent.....gro. \$1.00 @ \$1.50
Unhanded, Shlided.....gro. \$1.00 @ \$1.50
Scratch Awls:
Handled, Com.....gro. \$3.50 @ \$4.00
Handled, Socket.....gro. \$1.50 @ \$2.00
Hurwood.....40%

Awl and Tool Sets—See

Sets, Awl and Tool.

Axes—

Single Bit, base weights:
First Quality.....\$1.75 @ \$2.00
Second Quality.....\$1.25 @ \$1.50
Double Bit, base weights:
First Quality.....\$7.00 @ \$7.50
Second Quality.....\$6.50 @ \$7.00

Axle Grease—

See Grease, Axle

Axles—

Concord, Loose Collar.....\$4.00 @ \$4.50
Concord, Solid Collar.....\$4.00 @ \$4.50
No. 1 Common, Loose.....\$3.00 @ \$3.50

No. 1 1/2 Com., New Styles.....\$4.00 @ \$4.50

No. 2 Solid Collar.....\$4.00 @ \$4.50

Half Patent:

Nos. 7, 8, 11 and 12.....75% to 75%
Nos. 13 to 14.....70% to 10%
Nos. 15 to 18.....75% to 10%
Nos. 19 to 22.....75% to 10%

Boxes, Axle—

Common and Concord, not turned
lb. 1% @ 1%
Common and Concord, turned
lb. 1% @ 1%
Half Patent.....lb. 1% @ 1%

Bait— Fishing—

Hendryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....30% to 5%

Balances— Sash—

Caldwell new list.....50%
Pullman.....50% to 60%

Spring—

Spring Balances.....50% to 60%
Chatillon's:
Light Sps. Balances.....50% to 10%
Straight Balances.....40% to 50%
Circular Balances.....50% to 10%
Large Dial.....30%

Barb Wire—See Wire, Barb.

Bars— Crow—

Steel Crowbars, 10 to 40 lb.....
per lb., 3% @

Towel—

No. 10 Ideal, Nickel Plate.....# gro. \$8.50

Beams, Scale—

Scale Beams.....40% to 60%
Chatillon's No. 1.....30%
Chatillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered # doz. \$0.85;
Tinned.....\$1.00
No. 11 Wire Coppered # doz. \$1.10;
Tinned.....\$1.20
No. 10 Wire Galvanized.....# doz. \$1.75
Western W. G. Co.:
No. 1 Electric.....# gro. \$7.80
No. 2 Buffalo.....# gro. \$9.00
No. 3 Perfection Dust.....# gro. \$8.00

Egg—

Holt-Lyon Co.:
Holt, per doz., No. 1, Jap'd,
\$1.20; No. 1, Tin'd, \$1.50; No.
B, Jap'd, \$2.00; No. 2, Tin'd,
\$2.25.
Lyon, Jap'd, per doz., No. 2,
\$1.25; No. 3, \$1.50.
Taplin Mfg. Co.:
Improved Dover, per gro., No. 60,
\$8.00; No. 75, \$6.50; No. 100, \$7.00;
No. 102, Tin'd, \$8.50; No. 150,
Hotel, \$15.00; No. 152, Hotel
Tin'd, \$17.00; No. 300, Tumbler,
\$8.50; No. 302, Tumbler, Tin'd,
\$9.50; No. 300, Mammoth, per
doz., \$25.00.
Turner & Seymour Mfg. Co.:
T. & S. Dover.....\$6.00
Western, W. G. Co., Buffalo.....\$7.00
Wonder (H. M. Co.).....# gro. net, \$6.00

Bellows—

Blacksmith, Standard List.....
60% to 10% @ 60% to 10%
Hand—
Inch. 6 7 8 9 10
Doz. \$4.75 5.70 6.65 7.60 8.55
Molders—
Inch. 9 10 11 12 14
Doz. \$8.00 9.00 10.50 12.50 14.50
Bells— Cow—
Ordinary goods.....70% to 65%
High grade.....70% to 10%
Jersey.....75% to 10%
Texas Star.....50%

Door—

Abbe's Gong.....45%
Burton Gong.....50%
Home, R. & E. Mfg. Co.'s.....55% to 10%
Trip Gong.....50% to 10%
Yankee Gong.....55%

Hand—

Hand Bells, Polished, Brass.....80% to 10%
White Metal.....60%
Nickel Plated.....50% to 60%
Scales.....35% to 40%
Cone's Globe Hand Bells.....35% to 35%
Silver Chime.....33% to 35%

Miscellaneous—

Farm Bells.....lb. 2% @
Steel Alloy Church and School
50% to 60%

American Tube & Stamping Co.

Gongs.....10%
Table Call Bells.....50% to 50%

Belting— Leather—

Extra Heavy, Short Lap.....60% to 5%
Regular Short Lap.....60% to 5%
Standard.....70%
Light Standard.....70% to 5%
Cut Leather Lacing.....50%
Leather Lacing Sides, per sq. ft.
25¢

Rubber—

Agricultural (Low Grade).....75% to 5%
Common Standard.....70% to 10%
Standard.....60% to 5%
Extra.....60% to 5%
High Grade.....50% to 5%

Bench Stops—

See Stops, Bench

Benders and Upsetters,

Tire—
Detroit Perfected Tire Bender.....40%
Detroit Stoddard's Lightning
Upsetters, No. 1, \$1.25; No. 2, \$7.25;
No. 3, \$10.50; No. 4, \$16.25; No. 5,
\$20.50.
Green River Tire Benders and Up-
setters.....20%

Bicycle Goods—

John S. Leung's Son's 1906 list:
Chain, Parts, Spokes.....50%
Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills,
&c.—See Augers and Bits.

Blocks— Tackle—

Common Wooden.....70% to 75%
Hartz St. Tackle Blocks.....50% to 50%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse
Steel, 75%; Hollow Steel, 50% to 10%;
Star Wire Rope, 50%; Tarbox Metal
Snatch, 50%; Tarbox New Style
Steel, 50% to 10%; Wire Rope Snatch,
50%
Lane's Patent Automatic Lock and
Junior.....30%
Stowell's Novelty, Mal. Iron.....50% to 10%
Stowell's Self Loading.....60%
See also Machines, Hoisting.

Boards, Stove—

Zinc, Crystal, &c.....40%
Paper Embossed.....40% to 10%

Boards, Wash—

See Washboards.

Bobs, Plumb—

Keuffel & Esser Co.....38% to 5%

Boils—

Common Carriage (cut thread):
% x 6 and smaller.....75%
Larger and Longer.....65% to 7%
Phila. Eagle \$3.00 list May 21, '99

Bolt Ends, list Feb. 14, '95.....

80%
Machine, % x 4 and smaller
65% to 10%
Machine, larger and longer.....
65% to 10%

Door and Shutter—

Cast Iron Barrel, Japanned,
Round Brass Knob:
Inch. 3 4 5 6 8
Per doz. \$0.30 .35 .45 .60 .80
Cast Iron Spring Foot, Jap'd:
Inch. 6 8 10
Per doz. \$1.20 1.50 2.25
Cast Iron Chain, Flat, Japanned:
Inch. 6 8 10
Per doz. \$1.00 1.40 1.85
Cast Iron Flat Shutter, Jap'd,
Brass Knobs:
Inch. 6 8 10
Per doz. \$0.75 .85 1.25
Wrought Barrel Jap'd.....80% to 10%
Barrel Bronzed.....60% to 10%
Spring.....70% to 10%
Shutter.....50% to 50%
Square Neck.....75% to 10%
Square.....65% to 10%
Ives' Patent Door.....60%

Plow and Stove—

Plow.....65% to 10%
Stove.....87% to 10%

Tire—

Common Iron.....80%
Norway Iron.....80%

American Screw Company:

Norway Phila., list Oct. 16, '91.....30%
Eagle Phila., list Oct. 16, '91.....32%
Bay State, list Dec. 28, '99.....50%

Franklin Moore Co.: Norway Phila., list Oct. 16, '91.....30% Eagle Phila., list Oct. 16, '91.....32% Eclipse, list Dec. 28, '99.....50% Mount Carmel Bolt Co.: Norway Phila., list Oct. 16, '91.....30% Eagle Phila., list Oct. 16, '91.....32% Mount Carmel, list Dec. 28, '99.....30% Russell, Burdall & Ward Bolt & Nut Co.: Empire, list Dec. 28, '99.....80% Norway Phila., list Oct., '94.....50% Upson Nut Co.: Tire Bolts.....75% to 10%

Borers, Tap—

Borers Tap, Ring, with Handle:
Inch. 1/4 1/2 3/4 1 1 1/2 2
Per doz. \$1.80 5.60 6.40 8.00
Inch. 2 2 1/2 3 3 1/2 4 4 1/2
Per doz. \$2.65 11.50
Enterprise Mfg. Co., No. 1, \$1.25; No.
2, \$1.65 @ \$1.75; No. 3, \$2.50 each.....25%

Boxes, Mitre—

C. E. Jennings & Co.....30%
Langdon.....15% to 10%
Perfection.....40%
Seavey.....35%
Stanley R. & L. Co.: Nos. 240 to
460, 30%; Nos. 50 and 60.....35%

Braces—

Common Ball American.....\$1.25 @ \$1.50
Barber's.....50% to 10%
Fray's Genuine Spofford's.....60%
Fray's No. 10 to 120, \$1 to 120, 20%
411.....60%
C. E. Jennings & Co.....50% to 5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat.....50%
Millers Falls Drill Braces.....25% to 10%
P. S. & W. Co., Peck's Pat.....60% to 5%
Stanley R. & L. Co.:
Stanley, 35%; Victor.....45%

Brackets—

Wrought Steel.....80% to 10%
Griffin's Pressed Steel.....80% to 10%
Griffin's Folding Brackets.....70% to 10%
Stowell's Cast Shelf, 75%; Sink.....50%
Western, W. G. Co., Wire.....60% to 10%

Bright Wire Goods—

See Wire and Wire Goods.

Broilers—

Kilbourne Mfg. Co.....75% to 20%
Western, W. G. Co.....80%
Wire Goods Co.....75% to 10%

Buckets, Galvanized—

Price per dozen,
Quart.....19 12 14
Water, Regular.....1.40 1.70 1.90
Water, Heavy.....3.40 3.70 3.80
Fire, Rd. Bottom.....2.80 2.55 2.95
Well.....2.55 2.87 3.15

Bucks, Saw—

Hossier.....# gro. \$36.00

Bull Rings—See Rings, Bull

Butts— Brass—

Wrought, list, Sept., '95, 15 @—
Cast Brass, Tiebout.....50%

Cast Iron—

Fast Joint, Broad.....40% to 50%
Fast Joint, Narrow.....40% to 50%
Loose Joint.....70% to 10%
Loose Pin.....70% to 10%
Mayer's Hinges.....70% to 10%
Parliament Butts.....70% to 10%

Wrought Steel—

Discount.
Reversible and Broad, 75%
Light Reversible, Light
Narrow.....75% to 10%
Loose Joint, Narrow, L't
Inside Blind, etc.....75%
Back Flaps, Table,
Chest.....70% to 10%

Cages, Bird—

Hendryx Brass: Series 3000, 5000,
1100, 5%; 1200, 33% to 200, 300, 600,
900.....40% to 10%
Hendryx Bronze: Series 700, 800.....
40% to 10%
Hendryx Enamelled.....40% to 10%

Calipers—See Compasses.

Calks, Toe and Heel—

Blunt, 1 prong.....per lb. 45%
Sharp, 1 prong.....per lb. 45%
Burke's Blunt, 4 @ 4¢; Sharp, 4 @ 4¢

Gautier, Munt, 4@4¢; Sharp, 4@4¢
Perkins, Blunt, 3 lb, 3.65¢; Sharp, 4.15¢

Can Openers— See Openers, Can.

Cans, Milk—

Illinois Pattern.....1.35 1.85 2.05 each.
New York Pattern.....1.50 2.20 2.45 each.
Baltimore Pattern.....1.50 2.20 2.45 each.
Dubuque.....1.35 1.60 1.75 each.

Cans, Oil—

Buffalo Family Oil Cans:
3 10 gal. 518.00 60.00 123.60 gro. net.

Caps, Percussion—

Eley's E. B.....52@55¢
G. D.....per M 34@35¢
L.....per M 40@42¢
G. E.....per M 48@50¢
Musket.....per M 62@63¢

Primers—

Berdan Primers, 2¢ per M.....80%
B. L. Caps (Sturtevant Shells)
2¢ per M.....80%
All other primers per M.....1.15@1.60

Cartridges—

Blank Cartridges:
32 C. F., \$5.50.....1045¢
38 C. F., \$7.00.....1045¢
22 cal. Rim, \$1.50.....1045¢
32 cal. Rim, \$2.75.....1045¢
B. B. Caps, Con. Ball, Sugd. \$1.40
B. B. Caps, Round Ball.....1.19
Central Fire.....25¢
Target and Sporting Rifle.....1545¢
Primer Shells and Bullets.....1545¢
Rim Fire, Sporting.....50¢
Rim Fire, Military.....1545¢

Casters—

Bed.....70@70¢10¢
Plate.....60¢10¢60¢10¢5¢
Philadelphia.....75¢75¢10¢
Acme, Ball Bearing.....70¢10¢
Boss Anti-Friction.....70¢10¢
Gem (Roller Bearing).....80¢
Martin's Patent (Phoenix).....45¢
Standard Ball Bearing.....45¢
Tucker's Patent low list.....30¢
Yale (Double Wheel) low list.....50¢

Cattle Leaders—

See Leaders, Cattle.

Chain, Coil—

American Coil, Straight Link:
3-16 1/4 5-16 3/4 7-16 1/2 9-16
\$3.70 5.90 4.95 4.20 4.05 3.95 3.90
3/8 3/4 1/2 to 1 1/2 to 1 1/4 inch.
\$3.85 3.70 3.65 3.80
German Coil.....60¢10¢10¢70¢

Halter—

Halter Chains.....60¢45¢60¢10¢
German Pattern Halter Chains,
list July 21, '97.....60¢10¢10¢
Covert Mfg. Co.....35¢45¢
Halter.....35¢45¢
Covert's Saddlery Works.....70¢
Halter.....70¢

Cow Ties—

See Halters and Ties.

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6 1/2-6-3, Straight, with ring.....\$25.00
6 1/2-6-3, Straight, with ring.....\$26.00
6 1/2-8-2, Straight, with ring.....\$30.00
6 1/2-10-2, Straight, with ring.....\$35.00

NOTE—Add 2¢ per pair for Hooks.
Twist Traces: add per pair for Nos. 2
and 3, 2¢; No. 1, 3¢; No. 0, 4¢ to price of
Straight Link.

Eastern Standard Traces, Wag-
on Chain, &c.....60¢10¢

Miscellaneous—

Jack Chain, list July 10, '93:
Iron.....60¢10¢
Brass.....70¢10¢
Safety Chain.....70¢10¢
Gal. Pump Chain.....1b. 4¢1/2¢
Covert Mfg. Co.:
Breadst, Halter, Heel, Rein, Stal-
lion.....40¢
Covert Sad. Works:
Breadst, Hold Back, Rein.....70¢
Oneida Community:
Am. Dog Leads and Kennel Chains,
40¢@50¢5¢
Niagara Dog Leads and Kennel
Chains.....45¢60¢5¢
Wire Goods Co.:
Dog Chain.....70¢10¢
Universal Dbl.-Jointed Chain.....60¢

Chain and Ribbon, Sash—

Oneida Community:
Copper Chain, 60¢5¢; Steel Chain,
60¢

Pullman:
Bronze Chain, 60¢; Steel Chain,
60¢10¢

Sash Chain Attachments, per set.....5¢
Aluminum Sash Ribbon, per 100
ft.....\$1.25@3.00
Sash Ribbon Attachments, per set.....5¢

Chalk—(From Jobbers.)

Carpenters' Blue.....gro. 40¢@¢
Carpenters' Red.....gro. 35¢@¢
Carpenters' White.....gro. 30¢@¢
See also Crayons.

Checks, Door—

Bardsley's.....45¢
Pullman, per gro.....\$4.00
Ruswin.....60¢

Chests, Tool—

American Tool Chest Co.:
Boy's Chests, with Tools.....55¢
Youth's Chests, with Tools.....40¢
Gentlemen's Chests, with Tools.....30¢
Farmers' Carpenters', etc., Chests,
with Tools.....20¢

Machinists' and Pipe Fitters'
Chests, Empty.....50¢
Tool Cabinets.....50¢
C. E. Jennings & Co.'s Machinists'
Tool Chests.....33¢@10¢

Chisels—

Socket Framing and Firmer

Standard List.....75¢10¢75¢10¢5¢
Buck Bros.....30¢
Charles Buck.....30¢
C. E. Jennings & Co.:
Socket Firmer No. 10.....60¢
Socket Framing No. 15.....70¢
Ohio Tool Co.'s.....70¢
Swan's.....75¢
L. & I. J. White.....30¢@5¢
L. & I. J. White, Tanged.....25¢5¢

Tanged—

Tanged Firmers.....33¢1-3¢10¢
Buck Bros.....30¢
Charles Buck.....30¢
C. E. Jennings & Co. Nos. 191, 181, 25¢

Cold—

Cold Chisels, good quality.....13¢15¢
Cold Chisels, fair quality.....11¢12¢
Cold Chisels, ordinary.....9¢10¢

Chucks—

Almond Drill Chucks.....35¢
Almond Turret Six-Tool Chuck.....35¢
Beard Pat., each \$8.00.....35¢
Empire.....25¢
Blacksmiths'.....25¢
Jacobs' Drill Chucks.....35¢
Pratt's Positive Drive.....25¢
Skinner Patent Chucks:
Independent Lathe Chucks.....40¢10¢
Universal Reversible Jaws.....40¢
Combination Reversible Jaws.....40¢
Drill Chucks, New Model.....25¢
Standard, 40¢10¢; Skinner Pat.
25¢; Positive Drive.....33¢
Planer Chucks.....30¢
Steel Plate Jaws.....40¢10¢
Standard Tool Co.:
Imperial Drill Chuck.....45¢
Union Mfg. Co.:
Combination, Nos. 1, 2, 3, 4, 5, 6,
7, 8 and 17, 40¢; No. 21.....35¢
Scroll Combination, Nos. 82 and
94.....30¢
Geared Scroll, Nos. 33, 34 and 35.....30¢
Independent Iron, Nos. 13 and 318, 40¢
Independent Steel, No. 64.....30¢
Union Czar Drill, Nos. 000, 101,
103.....35¢
Universal 11, 12, 16, 17, 13, 14, 15, 40¢
Universal, No. 42.....30¢
Iron Face Plate Jaws, Nos. 28, 30,
48 and 50.....40¢
Steel Face Plate Jaws, Nos. 70 and
72.....35¢
Westcott Patent Chucks:
Lathe Chucks.....50¢
Little Giant Auxiliary Drill.....50¢
Little Giant Double Grip Drill.....50¢
Little Giant Drill, Improved.....50¢
Orchard Drill.....50¢
Scroll Combination Lathe.....50¢

Clamps—

Adjustable, Hammers'.....20¢20¢45¢
Carriage Makers', P., S. & W.
Co.....40¢10¢50¢
Beely, Parallel.....33¢40¢
Lineman's, Utica Drop Forge & Tool
Co.....40¢
Wood Workers, Hammers'.....40¢10¢
Saw Clamps, see Vises, Saw Filers'

Cleaners, Drain—

Ivan's Champion, Adjustable.....55¢
Ivan's Champion, Stationary.....45¢

Sidewalk—

Star Socket, All Steel.....30¢ doz. \$4.05 net
Star Shank, All Steel.....30¢ doz. \$3.24 net
W. & C. Shank, All Steel, 30¢ doz.,
7 1/2 in., \$3.00; 8 in., \$3.25.

Cleaners, Butchers'—

Foster Bros.....30¢
Fayette R. Stevens.....30¢
L. & I. J. White.....30¢

Clippers, Horse and Sheep—

Chicago Flexible Shaft Company:
98 Chicago Horse, each.....\$3.75
1902 Chicago Horse, each.....\$10.75
20th Century Horse, each.....\$5.00
Lightning Belt Horse, each.....\$15.00
Chicago Belt Horse, each.....\$20.00
Stewart's Enclosed Gear
Horse, each.....\$4.75
Stewart's Patent Sheep Shear-
ing Machine, each.....\$12.75

Clips, Axle—

Regular Styles, list July 1, '05.80%

Cloth and Netting, Wire—

See Wire, &c.

Cocks, Brass—

Hardware list:
Plain Bibbs, Globe, Kerosene,
Racking, Liquor, Bottling,
&c.....70¢
Compression Bibbs.....65¢10¢

Coffee Mills—

See Mills, Coffee.

Collars, Dog—

Nickel Chain, Walter B. Stevens &
Sons' list.....40¢
Leather, Walter B. Stevens & Son's
list.....40¢

Combs, Curry—

Metal Stamping Co.....40¢

Mane and Tail—

Covert's Saddlery Works.....60¢10¢

Compasses, Dividers, &c.—

Ordinary Goods.....75¢45¢75¢10¢
Bemis & Call Hdw. & Tool Co.:
Dividers, Double, 65¢; Inside or
Calipers.....65¢
Outside.....65¢
Calipers, Wing.....60¢
Compasses.....50¢
Wm. Schollhorn Co.:
Excelsior Dividers.....60¢
Lodi Dividers.....75¢

Conductor Pipe,—

L. C. L. to Dealers:
Territory: Galvanized Steel, Charcoal Iron, 14, 16@20 oz.
Eastern:
60¢50% 60¢2 1/2% 40¢10%
Central:
70% 55¢7 1/2% 40¢7 1/2%
Western and Southern:
65¢10% 55¢2 1/2% 40¢5%
So. Western:
62 1/2¢7 1/2% 50¢5% 40¢2 1/2%
Terms, 60 days; 2% cash 10 days. Fac-
tory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal. each.....2 3 4 6 8
Labrador.....\$1.20 \$1.40 \$1.60 \$2.10 \$2.70
Gal.....2 3 4 6 8
Iceland, ea.....\$1.50 \$2.10 \$2.10 \$3.90
Gal.....2 3 4 6 8
Galvanized, ea.....\$1.85 \$2.00 \$2.25 \$2.90 \$3.90
Galvanized, Lined, side handles,
Gal.....2 3 4 6 8
Each.....\$1.95 \$2.15 \$2.40 \$3.30 \$4.15
White Enameled, 25%; Agate Lined, 25%

Coopers' Tools—

See Tools, Coopers'.

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair
and heavier, 23¢@24¢; lighter
than 3 lbs. to pair.....25¢20¢

Cord— Sash—

Braided, Drab.....lb. 35¢
Braided, White, Com. Nos. 8
to 12, 24¢; No. 7, 24 1/2¢; No. 6,
25 1/2¢.

Cable Laid Italian.....

lb., A, 18¢; B, 16¢
Common India.....lb. 10¢10 1/2¢
Cotton Sash Cord, Twisted, 17¢@19¢
Patent Russia.....lb. 14¢
Cable Laid Russia.....lb. 14¢
India Hemp, Braided.....lb. 18¢
India Hemp, Twisted.....lb. 12¢13¢
Patent India, Twisted.....lb. 12¢13¢
Annisson Cordage Co.: 3/4 lb. solid
Braided, Nos. 8 to 12, 30¢21¢; No. 7,
30¢21¢; No. 6, 30¢25¢; 3/4 doz., 50 ft.,
Oriole, \$2.00; 50 ft., Columbia, \$0.85;
50 ft., Victors, \$1.00; 50 ft., 6-Thread,
\$1.10; 50 ft., 3-Thread, \$0.95; 50 ft.,
Manila, \$1.40; 60 ft., Jute, \$0.75.
Pearl Braided, cotton, No. 6, 3/4 lb.
25¢; No. 7, 25¢; No. 8 to 12, 24 1/2¢;
Eddystone Braided, Nos. 6, 8 and
10, 25¢; 7, 25 1/2¢; 6, 26¢.
Harmony Cable Laid Italian, Nos. 7
to 10.....30¢10¢23¢
Feetless:
Cable Laid, Italian, 16¢; Russian,
15¢; India.....12¢
Braided India.....18¢
Pullman:
Wire Sash Cord.....10¢
Sash Cord Attachments, per doz. 10¢
Samson, Nos. 8 to 12:
A. Drab, 45¢; A. White, 40¢;
B. Drab, 40¢; B. White, 35¢;
Italian Hemp, 40¢; Linen.....57 1/2¢
See also Chain and Ribbon.

Wire, Picture—

List July 10, 1906.....85¢10¢10¢@—
Hendry Standard Wire Picture Cord,
old list, 85¢10¢
Cradles—
Grain.....40¢12 1/2¢
Crayons—
White Round Crayons, Cases, 100
gro., \$5.50@5.75, at factory, but
lower prices made by jobbers
D. M. Stewart Mfg. Co.:
Genuine, Per gro.
Round Pencil, \$2.25; Square Pen-
cil, \$1.75; Flat Crayon, \$2.50;
Metal Workers' Crayon, \$3.00;
Rolling Mill Crayon, \$3.00.
Compo. Per gro.
Round Pencil, \$1.50; Square Pen-
cil, \$1.50; Flat Crayon, \$1.50;
Metal Workers' Crayon, \$2.50;
Rolling Mill Crayon, \$2.50;
Railroad Crayon, \$1.00; Compo.
Crayon, \$1.00.
Zelnicker's Lumber:
Red, Blue, Green.....30¢ doz. \$5.50
Black.....30¢ doz. \$5.00
See also Chalk.

Crooks, Shepherds'—

Fort Madison, per doz., Heavy, \$7.00;
Light.....\$6.50

Crow Bars—See Bars, Crow.

Cultivators—

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1847, 30 doz. \$3.50
Star, Eagle, Rogers & Hamilton
and Anchor.....30 doz. \$3.00
Wm. Rogers & Son.....30 doz. \$2.50

Cutters— Glass—

H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward.....40%

Meat and Food—

American.....30%
Nos.....1 2 3 4 5
Each.....\$5 \$7 \$10 \$25 \$50 \$60
Enterprise:
Nos.....5 10 12 22 32
Each.....\$2 \$3 \$2.75 \$4.50 \$6 25¢@5¢7 1/2¢
No. 202, \$1.50.....40¢7 1/2¢
Dixon's.....30¢ doz. 40¢50¢
Nos.....1 2 3 4
Ideal.....\$14.00 \$17.00 \$19.00 \$30.00
Little Giant.....40¢10¢50¢
Nos.....305 310 312 320 322
\$35.00 \$48.00 \$44.00 \$72.00 \$68.00
N. E. Food Choppers.....25%
New Triumph No. 605, 30 doz. \$24.00,
40¢50%

Ruswin Food, No. 1, \$24.00; No. 2,
\$27.00.....45¢10¢10¢
Woodruff's.....30 doz. 40¢50¢
Nos.....100 150
Enterprise Beef Shavers.....25¢30%

Slaw and Kraut—

Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters, 21 x 7, 28 x 5, 30
x 9.....55%
Kraut Cutters, 36 x 12, 40 x 12.....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife.....30 doz. \$3.00
Combined Slaw Cutter and Corn
Grater.....30 doz. \$4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife.....gr. \$18@20
Slaw Cutters, 2 Knife.....gr. \$22@32¢

Tobacco—

All Iron, Cheap.....doz. \$1.25@1.50
Enterprise.....25¢30%
National, 30 doz., No. 1, \$21; No. 2,
\$18.....42%

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger, per doz. \$9.00
Ivan's Imp'vd Post Hole Auger, 40¢5¢
Vaughan Pattern Post Hole Augers,
30 doz., \$6.25
Perfection Post Hole Diggers, 30
doz., \$8.25
Split Handle Post Hole Diggers,
30 doz., \$7.25
Kohler's, 30 doz., Universal, \$14.00;
Little Giant, \$12.00; Hercules,
\$10.00; Invincible, \$9.00; Rival,
\$8.00; Pioneer.....\$7.00
Never-Break Post Hole Diggers, 30
doz., \$34.00.....60%
Samson, 30 doz. \$34.00.....25%

Dividers—See Compasses.

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, 30
doz., \$18; No. 2, \$15; No. 3, \$12;
No. 4, \$10.

Drawing Knives—

See Knives, Drawing.

Dressers, Emery Wheel—

Diamond Emery Wheel Dressers.....35%
Diamond Wheel Dresser Cutters.....35%

Drills and Drill Stocks—

Common Blacksmiths' Drill,
each.....\$1.50@1.75
Breast, Millers Falls.....15¢10¢
Breast, P. S. & W.....40%
Goodell Automatic Drills, 40¢5¢10¢10¢
Johnson's Automatic Drills, Nos. 2
and 3.....16%
Johnson's Drill Point.....16%
Millers Falls Automatic Drills, 33¢10¢
Ratchet, Curtis & Curtis.....25¢
Ratchet, Parker's, 40¢; Weston's, 40¢
Ratchet, Weston's, Style II Im-
proved.....40%
Ratchet, No. 012.....40%
Ratchet, Whitney's, P. S. & W. 50¢
Whitney's Hand Drill No. 1, \$10.00,
Adjustable, No. 10, \$12.00.....33 1/2%

Twist Drills—

Bit Stock.....60¢10¢10¢70¢
Taper and Straight Shank.....
60¢10¢60¢10¢5¢

Drivers, Screw—

Screw Driver Bits, per doz. \$5@50¢
Balsey's Screw Holder and Driver, 30
doz., 2 1/2-in., \$6; 4-in., \$7.50; 6-in.,
\$9
Buck Bros' Screw Driver Bits.....30%
Champion.....60%
Edson.....60%
Fray's Hol. H'dle Sets No. 3, \$12.50,
Gay's Double Action Ratchet.....35%
Goodell's Auto. 50¢10¢10¢50¢10¢10¢5¢
Hurwood.....40%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....25¢10¢
Millers Falls, Nos. 20 and 21.....25¢10¢
Millers Falls, Nos. 11, 12, 41, 42, 15¢10¢
New England Specialty Co.....40¢5¢
Smith & Hemenway Co.....40¢5¢
H. D. Smith & Co.'s Perfect H'dle, 40¢
Stanley R. & L. Co.'s:
No. 61, Varn. Handles, 65¢; No.
85, 75¢; Victor, 55¢; Defiance, 70¢
Swan's:
Nos. 7565 to 7568, 50¢; No. 7540,
40¢10¢

Eave Trough, Galvanized—

Territory: L. C. L. Galvanized
Galv. Charcoal Copper.
Steel. Iron. 14, 16@20 oz.
Eastern:
60% 70¢45% 40¢10%
Central:
75¢10¢7 1/2% 70% 40¢7 1/2%
Western and Southern:
70¢20¢7 1/2% 60¢15¢2 1/2% 40¢5%
So. Western:
70¢80% 65¢2 1/2% 40¢2 1/2%
Terms—4% for cash. Factory ship-
ments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—

Factory shipments, all territories:
Galv. Steel and Galv. C. I.
Standard Gauge.....60¢10¢
No. 85.....50%

No. 24.....	25%
No. 22.....	30%
Copper.....	50%
Elbows, Stove Pipe—	
Dover, one piece.....	40%
Perfect Elbows (R. M. Co.).....	40%
Emery, Turkish—	
4 to 54 to	
46: 220: Flour.	
Kegs.....lb. 5¢	54¢ 54¢
1/4 Kegs.....lb. 54¢	54¢ 54¢
1/2 Kegs.....lb. 54¢	6¢ 6¢
10-lb. cans.....	7¢ 6¢
10 in. case.....	6 1/2¢ 6¢
10-lb. cans, less	
than 10.....	10¢ 10¢ 8¢
Less quantity.....	10¢ 10¢ 8¢
NOTE.—In lots 1 to 3 tons a discount of 10% is given.	
Extractors, Lemon Juice	
—See Squeezers, Lemon.	
Fasteners, Blind—	
Zimmerman's.....	50¢10%
Wallings.....	40¢10%
Cord and Weight—	
Ives.....	40%
Faucets—	
Cork Lined.....	50¢10¢10%
Metallic Key, Leather Lined.....	60¢10¢70%
Red Cedar.....	40¢10¢50%
Petroleum.....	70¢10¢75%
B. & L. B. Co.:	
Metal Key.....	60¢10%
Star.....	60%
West Lock.....	50¢10%
John Sommer's Peerless Tin Key.....	40%
John Sommer's Boss Tin Key.....	50%
John Sommer's Victor Mtl. Key.....	50%
John Sommer's Duplex Metal Key.....	60%
John Sommer's Diamond Lock.....	40%
John Sommer's I. X. L. Cork Lined.....	50%
John Sommer's Reliable Cork Lined.....	60%
John Sommer's Chicago Cork Lined.....	60%
John Sommer's O. K. Cork Lined.....	50%
John Sommer's No Brand, Cedar.....	50%
John Sommer's Perfection, Cedar.....	40%
McKenna, Brass:	
Burglar Proof, N. P.....	25%
Improved, 1/2 and 3/4 inch.....	25%
Self Measuring—	
Enterprise, 1/2 doz. \$36.00.....	40¢10%
Lane's, 1/2 doz. \$36.00.....	40¢10%
National Measuring, 1/2 doz. \$36.00.....	40¢10%
Felice Plates—	
See Plates, Felice.	
Files— Domestic—	
List revised Nov. 1, 1899.	
Best Brands.....	70¢10¢75¢10%
Standard Brands.....	75¢10¢75¢10%
Lower Grade.....	75¢10¢10¢80¢10%
Imported	
Stubs' Tapers, Stubs' list, July 24, '97.....	33 1/3¢40%
Fixtures, Fire Door—	
Richards Mfg. Co.:	
Universal, No. 103; Special, No. 104.....	33.75
Fusible Links, No. 96.....	50%
Expansion Bolt, No. 107.....	60¢10%
Grindstone—	
Net Prices:	
15 17 19 21	
Per doz.....	\$3.25 3.75 4.25 4.75
P. S. & W. Co.....	30¢10¢40%
Reading Hardware Co.....	60%
Stowell's Giant Grindstone Hanger.....	1/2 doz. \$6.00
Stowell's Grindstone Fixtures, Extra Heavy, 50¢10¢10%; Light.....	60¢10%
Fodder Squeezers—	
See Compressors.	
Forks—	
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.	
Iowa Dig-Ezy Potato.....	60¢10%
Victor, Hay.....	60¢15¢20%
Victor, Manure.....	60%
Victor, Header.....	60%
Champion, Hay.....	60%
Champion, Header.....	60%
Champion, Manure.....	60¢15¢20%
Columbia, Hay.....	60%
Columbia, Manure.....	60%
Columbia, Spading.....	70¢12%
Hawkeye Wood Barley.....	40%
W. & C. Potato Digger.....	60¢10%
Acme Hay.....	60¢20%
Acme Manure, 4 line.....	60¢10¢5%
Dakota Header.....	60¢20%
Jackson Steel Barley.....	60¢20%
Kansas Header.....	60%
W. & C. Favorite Wood Barley.....	40%
Pinted.—See Spoons.	
Frames— Saw—	
White, 8" x 7" Bar, per doz. 75¢10¢80¢	
Red, 8" x 7" Bar, per doz. \$1.00¢1.25	
Red, Dbl. Brace, per doz. \$1.40¢1.50	
Freezers, Ice Cream—	
Qt.....	1 2 3 4 6
Each.....	\$1.30 \$1.60 \$1.90 \$2.20 \$2.80
Fruit and Jelly Presses—	
See Presses, Fruit and Jelly.	
Fry Pans—See Pans, Fry.	
Fuse— Per 1000 Feet.	
Hemp.....	\$2.75
Cotton.....	3.20
Waterproof Sgl. Taped.....	3.65
Waterproof Dbl. Taped.....	4.40
Waterproof Tpl. Taped.....	5.15
Gates, Molasses and Oil—	
Stebbins' Pattern.....	80¢10%
Gauges—	
Marking, Mortise, &c.....	50¢50¢10%
Chapin-Stephens Co.:	
Marking, Mortise, &c.....	50¢50¢10%
Scholl's Patent.....	50¢10¢50¢10%
Door Hangers.....	50¢50¢10%

Stanley R. & L. Co.'s Butt and Rabbet Gauge.....	30%
Marking and Mortise.....	60%
Wire, Brown & Sharpe's.....	25%
Wire, Morse's.....	25%
Wire, P. S. & W. Co.....	33 1/3%
Gimlets— Single Cut—	
Numbered assortments, per gro.	
Nail, Metal, No. 1, \$2.00; 2, \$2.50	
Spike, Metal, No. 1, \$4.00; 2, \$4.50	
Nail, Wood Handled, No. 1, \$2.50; 2, \$2.60	
Spike, Wood Handled, No. 1, \$4.50; 2, \$4.60	
Glass, American Window	
See Trade Report.	
Glasses, Level—	
Chapin-Stephens Co.....	60¢60¢10%
Glue, Liquid Fish—	
Bottles or Cans, with Brush.....	
International Glue Co. (Martin's).....	40%
Grease, Axle—	
Common Grade.....	gro. \$1.50¢6.00
Dixon's Everlasting, 10-lb. pails, ea. 85¢; in boxes, 1/2 doz., 1 lb. \$1.20; 2 lb.....	\$2.00
Helmet Hard Oil.....	25%
Griddles, Soapstone—	
Pike Mfg. Co.....	33 1/3¢33 1/3¢10%
Grindstones—	
Bicycle Emery Grinder.....	\$6.50
Bicycle Grindstones, each.....	\$2.50¢3.00
Pike Mfg. Co.:	
Improved Family Grindstones, per inch, 1/2 doz.....	\$2.00
Pike Mower and Tool Grinder, each.....	\$6.00
Grips, Nipple—	
Perfect Nipple Grips.....	40¢10¢2%
Halters and Ties—	
Cow Ties.....	60¢10¢60¢10¢45%
Covert Mfg. Co.:	
Web.....	45%
Jute Rope.....	45%
Sisal Rope.....	35%
Cotton Rope.....	45%
Hemp Rope.....	45%
Covert's Saddlery Works:	
Jute and Manila Rope Halters.....	70%
Sisal Rope Halters.....	60¢20%
Jute, Manila and Cotton Rope Ties.....	70%
Sisal Rope Ties.....	60¢10%
Oneida Community:	
Am. Coil and Halters.....	40¢40¢5%
Am. Cow Ties.....	45¢50%
Niagara Coil and Halters.....	45¢50¢5%
Niagara Cow Ties.....	45¢50¢5%
E. T. Rugg & Co.:	
Leather Halters.....	50%
Web Halters and Webbing.....	60%
Jute and Sisal Rope Halters.....	60%
Jute and Sisal Horse and Cattle Ties.....	60%
Cotton Horse Ties.....	60%
Livery Ties, Braided.....	60%
Hammers—	
Handled Hammers—	
Heller's Machinists'.....	40¢10¢40¢10¢10%
Heller's Farriers.....	40¢10¢40¢10¢10%
Magnetic Tack, Nos. 1, 2, 3, \$1.25; \$1.50, \$1.75.....	50%
Peck, Stow & Wilcox, Steel.....	50%
Payette R. Plumb:	
Plumb, A. E. Nail.....	33 1/3¢40¢33 1/3¢10¢7 1/2%
Engineers' and B. S. Hand.....	50¢7 1/2¢50¢50¢10¢10¢5%
Machinists' Hammers.....	50¢50¢50¢10¢5%
Riveting and Tinner's.....	40¢40¢50¢10¢7 1/2%
Heavy Hammers and Sledges—	
Under 3 lb., per lb., 50¢.....	80¢10%
3 to 5 lb., per lb., 50¢.....	80¢10%
Over 5 lb., per lb., 30¢.....	80¢10¢10%
Wilkinson's Smith's.....	1 lb. 9¢10¢
Handles—	
Agricultural Tool Handles	
Axe, Pick, &c.....	60¢10¢60¢10¢45%
Hoe, Rake, &c.....	45¢50%
Fork, Shovel, Spade, &c.....	45¢50%
Long Handles.....	45¢50%
D Handles.....	50¢10¢50¢5%
Cross-Cut Saw Handles—	
Atkins.....	40%
Champion.....	45¢45¢10%
Dixon's.....	50%
Mechanics' Tool Handles—	
Auger, assorted.....	gro. \$2.50¢\$3.00
Brad Axl.....	gro. \$1.65¢\$1.75
Chisel Handles, Ass'd, per gro.:	
Tanged Firmer, Apple, \$2.40¢	\$2.65; Hickory.....\$2.15¢2.40
Socket Firming, Apple, \$1.75¢	\$1.95; Hickory.....\$1.45¢\$1.60
Socket Framing, Hickory.....	\$1.60¢\$1.75
File, assorted.....	gro. \$1.30¢\$1.40
Hammer, Hatchet, &c.....	60¢10¢60¢10¢45%
Hand Saw, Varished, doz. 80¢85¢; Not Varished.....	65¢75¢
Plane Handles:	
Jack, doz. 30¢; Jack, Bolted, 75¢	
Fore, doz. 45¢; Fore, Bolted, 90¢	
Chapin-Stephens Co.:	
Carring Tool.....	40¢40¢10%
Chisel.....	65¢65¢10%
File and Awl.....	65¢65¢10%
Saw and Plane.....	40¢40¢10%
Screw Driver.....	40¢40¢10%
Millers Falls Adj. and Ratchet Auger Handles.....	15¢10%
Nicholson Simplicity File Handle.....	1/2 gro. \$0.85¢\$1.50

Hangers—

NOTE.—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c	
Allith Mfg. Co.:	
Reliable, No. 1; Allith, No. 3; Adjustable, No. 6; Reliable Parlor Door.....	50%
Chicago Spring Butt Co.:	
Friction.....	25%
Oscillating.....	25%
Big Twin.....	25%
Chisholm & Moore Mfg. Co.:	
Baggage Car Door.....	50%
Elevator.....	50%
Railroad.....	50%
Cronk & Carrier Mfg. Co.:	
Loose Axle.....	60¢10%
Roller Bearing.....	70%
Griffin Mfg. Co.:	
Solid Axle, No. 19, \$12.00.....	70%
Roller Bearing, No. 11, \$15.00.....	70%
Roller Bearing, Ex. Hy., No. 22, \$18.00.....	70%
Hinged Hangers, \$16.00.....	60¢10%
Lane Bros. Co.:	
Parlor Door Bearing, \$4.00; Standard, \$3.15; No. 105, \$2.85; New Model, \$2.80; New Champion.....	\$2.25
Barn Door, Standard.....	60¢45%
Hinged.....	net \$6.40
Covered.....	60¢45%
Special.....	70¢45%
Lawrence Bros.:	
Advance and Sterling.....	60¢10%
Cleveland and Peerless.....	75%
Clippert, No. 75.....	60%
Crown.....	60¢10%
East 20; Single Sets, \$1.25.....	60¢10%
Giant.....	60¢45%
Hummer.....	70¢45%
New York.....	60¢10%
McKinney Mfg. Co.:	
No. 1, Special, \$15.....	60¢10%
No. 2, Standard, \$18.....	60¢10%
Hinged Hangers, \$16.....	50%
Meyers' Stagion Hangers.....	60¢45%
Richards Mfg. Co.:	
Hangers, Nos. 47, 48, 147, 247, 248.....	60¢45%
Pioneer Wood Track No. 2.....	\$2.00
Ball B'r's St'l Track No. 10, 50¢10%	
Roller B'r's St'l Track No. 12, \$2.15	
Roller B'r's St'l Track No. 13, \$2.30	
Roller B'r's St'l Track No. 39, 41, 43.....	70¢10%
Hero, Adj. Track No. 19, 50¢10%	
Adjustable Track Tandem Trol-ley Track No. 15.....	\$2.00
Seal, Steel Track No. 8.....	\$2.25
Auto Adj. Track No. 22, 50¢10%	
Trolley B. D. No. 17, \$1.25; F. D. No. 120, \$2.10; No. 121, \$2.25; No. 150.....	\$2.35
Safety Underwriters F. D. No. 1.....	50%
Tandem No. 4, 24 and 3.....	60¢10%
Palace, Adjustable Track No. 132.....	50¢10%
Royal, Adjustable Track No. 122.....	50¢10%
Woods Wood Track No. 1.....	\$2.00
Trolley B. D. No. 20.....	50¢10%
Trolley B. D. No. 24, \$1.30; No. 27, \$1.40; No. 28, \$1.50.....	\$1.60
Roller Bearings, Nos. 37, 38, 39, 41, 43, 44, Sizes 1 and 2, 70¢10%	
Anti-friction, No. 42; No. 44, sizes 2 1/2 and 3.....	60¢10%
Hinged Tandem No. 48.....	60¢45%
Folding Door B. B. Swivel No. 130.....	40%
Safety Door Hanger Co.:	
Storm King Safety.....	60%
U. S. Standard Hinge.....	60%
Stowell Mfg. & Foundry Co.:	
Acme Parlor Door Bearing.....	40%
Ajax Hinge Door.....	50%
Apex Parlor Door.....	50¢10¢45%
Atlas, 60"; Freight Car Door, 60" Baggage Car Door.....	50%
Climax Anti-Friction.....	50¢10%
Elevator.....	70¢45%
Express.....	50%
Interstate.....	60¢10%
Lundy Parlor Door.....	50¢10%
Magic, 60"; Rex Hinge Door, 60" Matchless.....	60¢10%
Parlor Door, 50¢10%; Railroad.....	50¢10%
Street Car Door.....	50%
Steel, Nos. 300, 401, 500.....	50¢10%
Underwriters' Fire Door.....	40%
Wild West Warehouse Door, 50" Zenith for Wood Tracks.....	50¢10%
A. L. Sweet Iron Works:	
Check Back, 70"; Eagle.....	70%
Climax Anti-Friction.....	50¢10%
Hilo Hinge, New Perfection.....	60%
Pilot Hinge.....	60%
Rider Woooster.....	60%
Western Pattern.....	70%
Taylor & Boggis F'y Co.'s Kid-der's Roller Bearing, 50¢15¢10¢5%	
Hangers— Garment—	
Pullman Trousers, 1/2 gro., 1 pair Flat Aluminum, \$9.00; 1 pair Round Nickel-ated, \$9.00; 4 pair Round Nickel-ated, \$27.00; 1 pair Flat Gun Metal, \$12.00; 1 pair Flat Black Enamel, \$7.50; 1 pair Wood Clamp, \$13.00; Skirt Hangers, Folding, per gro., \$21.00; Coat Hangers, Folding, per gro., \$8.00; Garment Hanger Rods, Round Nickel-ated, per gro., \$15.00; Garment Hanger Loops, Round Nickel-ated, per gro., \$15.00	
Victor Folding.....	1/2 gro. \$9.00
Western, W. G. Co.....	70¢10%
Gate—	
Myers' Patent Gate Hangers, 1/2 doz. net.....	\$4.50
Joist and Timber—	
Lane Bros. Co.....	30%
Hooks—	
Griffin's Security Hasp.....	50%
McKinney's Perfect Hasp, 1/2 doz.....	50%
Hatchets—	
Regular list, first quality.....	50%
Second quality \$1.00 per doz. less than first quality.	

Heaters, Carriage—

Clark, No. 5, \$1.75; No. 5B, \$2.00; No. 3, \$2.25; No. 3D, \$2.75; No. 7D, \$3.00; No. 3E, \$3.25; No. 1, \$3.50.....	15%
Clark Coal, 1/2 doz. \$0.75.....	10%
Hinges—	
Blind and Shutter Hinges—	
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)	
No.....	1 3 5
Dos. pair.....	\$0.75 1.35 2.70
Mortise Shutter: (L. & P., O. S., Dixie, &c.)	
No.....	1 1 1/2 2 2 1/2
Dos. pair.....	\$0.70 .65 .60 .55
Mortise Reversible Shutter (Buf-falo, &c.):	
No.....	1 1 1/2 2
Dos. pair.....	\$0.70 .65 .60
North's Automatic Blind Fixture, No. 2, for Wood, \$9.00; No. 3, for Brick, \$11.50.....	
Charles Parker Co.....	70¢75%
Parker Wire Goods Co.:	
Hale & Benjamin Automatic Blind Hinges.....	50%
Hale's Blind Awning Hinges, No. 110, for wood, \$9.00; No. 111, for brick, \$9.00.....	30%
Reading's Gravity.....	60%
Stanley's Steel Gravity Blind Hinges, 1/2 doz. sets, without screws, \$4.90; with screws, \$1.20.....	75¢10%
Wrightville Hardware Co.:	
O. B. Lull & Porter.....	75¢10%
Acme, Lull & Porter.....	75¢10%
Queen City Reversible.....	75¢10%
Shepard's Noiseless, Nos. 60, 65, 55.....	75¢10%
Niagara Gravity Locking, Nos. 1, 3 & 5.....	75¢10%
1868, Old Pat'n, Nos. 1, 3 & 5.....	75¢10%
Tip Pat'n Nos. 1, 3 & 5.....	10¢45%
Buffalo Gravity Lockir.....	75¢10%
Shepard's Double Locking, Nos. 20 & 25.....	70%
Champion Gravity Locking, No. 75, 75%	
Steamboat Gravity Locking, No. 10, 75%	
Pioneer, Nos. 080, 45 & 54.....	75%
Empire, Nos. 101 & 103.....	70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....	60%
Gate Hinges—	
Clark's or Shepard's—Dox. sets:	
No.....	1 2 3
Hinges with L's chs.....	\$2.00 2.70 5.00
Hinges only.....	1.40 2.05 3.80
Latches only.....	1.70 .70 .35
New England:	
With Latch.....	doz. \$2.00
Without Latch.....	doz. \$1.60
Reversible Self-Closing:	
With Latch.....	doz. \$1.75
Without Latch.....	do

Screw Hook and Strap. { 6 to 12 in. .lb. 3¢
13 to 20 in. .lb. 3½¢
21 to 36 in. .lb. 3½¢

Screw Hook and Eye:
¾ to 1 inch. .lb. 6½¢
1½ inch. .lb. 7½¢
2 inch. .lb. 8½¢

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers. 30¢ & 2¢
Hods— Coal—

Inch	15	18	17	18
Galt. Open	\$2.50	2.75	3.00	3.25
Jap. Open	\$1.90	2.10	2.25	2.55
Galt. Funnel	\$3.00	3.20	3.40	3.90
Jap. Funnel	\$2.45	2.65	2.85	3.30

Masons' Etc.—
Cleveland Wire Spring Co.:
Steel Brick No. 181.....each \$0.95
Steel Mortar, No. 158.....each \$1.25

Hods— Eye—
Scott and Oval Pattern.....
60¢ 10¢ 60¢ 10¢ 10¢

Grub, list Feb. 23, 1899.....
70¢ 10¢ 75¢ 10¢

D. & H. Scovill—
Handled—
NOTE—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Crown's Wedding No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Hoisting Apparatus—
See Machines, Hoisting.

Holders— Bit—
Angular, ½ doz. \$24.00.....45¢ & 10¢

Door—
Bardsley's.....45¢
Empire.....50¢
Pullman.....50¢
Superior.....35¢ & 10¢

File and File Holders—
Nicholson File Holders and File Handles.....35¢ & 40¢

Fruit Jar—
Triumph Fruit Jar Holder, ½ gross, \$10.80; ½ doz. \$1.25

Hones—Razor—
Pike Mfg. Co., Belgian, German and Swaty.....50¢

Hooks—Cast Iron—
Bird Cage, Reading.....40¢
Clothes Line, Reading List.....40¢
Clothes Line, Stowell's.....70¢
Coat and Hat, Reading.....45¢ & 20¢
Coat and Hat, Stowell's.....70¢
Coat and Hat, Wrightville.....70¢
Harness, Reading List.....40¢
Harness, Stowell's.....60¢
School House, Stowell's.....70¢

Wire—
Belt.....80¢ & 10¢
Wire C. & H. Hooks.....75¢ & 10¢ & 10¢ & 10¢
Columbian Hdw Co., Gem.....70¢ & 10¢
Parker Wire Goods Co., King.....70¢ & 10¢
Van Wagner, Coat and Hat.....70¢
Western W. G. Co., Molding.....75¢
Wire Goods Co.: Chief, 70%; Crown, 75%; Czar, 65%; V. Brace, 75%; Czar Harness, 50¢ & 10¢.

Wrought Iron—
Box, 6 in., per doz., \$1.00; 8 in., \$1.25; 10 in., \$1.50.
Cotton.....doz. \$1.05 & \$1.25
Wrought Staples, Hooks, &c. See Wrought Goods

Miscellaneous—
Hooks, Bench, Stop, Bench, Bush, Light, doz. \$4.75; Medium, \$5.35; Heavy, \$6.25
Grass, best, all sizes, per doz. \$1.60
Grass, common grades, all sizes, per doz. \$1.30
Whiffletree.....lb. 5¢ & 6¢
Hooks and Eyes: 60¢ & 50¢ & 60¢ & 10¢ & 5¢
Malleable Iron.....70¢ & 10¢ & 10¢
Covert Mfg. Co., Gate and Scuttle Hooks.....40¢
Covert Saddlery Works' Self Locking Gate and Door Hook.....60¢
Ft. Madison Cut-Edge Corn Hooks.....doz. \$3.25 net
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—
See Nails, Horse.

Horse Shoes—
See Shoes, Horse.

Hose, Rubber—
Garden Hose, ¾-inch: Competition.....ft. 8 @ 6¢
3-ply Guaranteed.....ft. 8 @ 9¢
4-ply Guaranteed.....ft. 10 @ 11¢
Cotton Garden, ¾-inch, coupled: Low Grade.....ft. 8 @ 9¢
Fair Quality.....ft. 10 @ 11¢

Irons— Sad—
From 1 to 10.....lb. 3¢ & 3½¢
R. B. Sad Irons.....lb. 3¢ & 3½¢
Mrs. Potts', cents per set:
Nos. 50 55 60 65
Jan'd Tops.....65 62 75 72
Tin'd Tops.....70 67 80 77
New England Pressing, lb. 5¢ & 4¢

Pinking—
Pinking Irons.....doz. 60¢

Irons, Soldering—
See Copiers.

Jacks, Wagon—
Covert Mfg. Co.:
Auto Screw.....30¢ & 2¢; Steel, 45¢
Covert's Saddlery Works:
Daisy.....60¢ & 10¢; Victor, 60¢
Lockport.....50¢
Lane's Steel.....30¢ & 10¢ & 10¢
Richards' Tiger Steel, No. 130.....50¢ & 10¢
Smith & Hemenway Co.'s.....25¢

Kettles—
Brass, Spun, Plain.....20¢ & 25¢
Enameled and Cast Iron—See Ware, Hollow.

Knives—
Butcher, Kitchen, &c.—
Foster Bros' Butcher, &c.....30¢
Wilkinson Shear & Cutlery Co.....60¢

Corn—
Wilkinson Wilcut Brand Knives and Hooks.....60¢
Withington Acme, ½ doz. \$2.65;
Dent, \$2.75; Adj. Serrated, \$2.20;
Serrated, \$2.10; Yankee No. 1, \$1.50;
Yankee No. 2, \$1.15.

Drawing—
Standard List.....75¢ & 10¢ & 10¢
C. E. Jennings & Co., Nos. 13, 46, 60,
Jennings & Griffin, Nos. 41, 42.....60¢
Ohio Tool Co.'s.....70¢
Swan's.....75¢
Watrous.....16¢
L. & J. White.....30¢ & 25¢ & 25¢

Hay and Straw—
Serrated Edge, per doz. \$5.75 & 6.00
Ivan's Sickle Edge.....doz. \$9.50
Ivan's Serrated.....doz. \$10.00

Mincing—
Buffalo.....½ gro. \$13.00

Miscellaneous—
Farriers'.....doz. \$3.00 & 3.25
Westenholm's.....doz. \$3.00 & 3.25

Knobs—
Base, 2½-inch, Birch, or Maple,
Rubber Tip.....gro. \$1.25 & \$1.50
Carriage, Jap., all sizes.....gro. 40¢ & 45¢

Door, Mineral.....doz. 65¢ & 70¢
Door, Por. Jap'd.....doz. 70¢ & 75¢
Door, Por. Nickel.....doz. \$2.05 & \$2.15
Bardsley's Wood Door, Shutters, &c. 15¢

Lacing, Leather—
See Belting, Leather.

Ladders, Store, &c.—
Allith Mfg. Co., Reliable.....50¢
Lane's Store.....50¢
Myers' Noiseless Store Ladders.....50¢
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50¢
Climax Shelf, No. 113.....50¢
Trolley, No. 109.....50¢

Ladies, Melting—
L. & G. Mfg. Co. (low list).....25¢
P. S. & W.....50¢
Reading.....60¢

Lanterns—Tubular—
Regular Tubular, No. 0.....doz. \$4.25 & \$4.50
Lift Tubular, No. 0.....doz. \$4.75 & \$5.00
Hinge Tubular, No. 0.....doz. \$4.75 & \$5.00
Other Styles.....40¢ & 45¢

Bull's Eye Police—
No. 1, 2½-inch.....\$2.75 & \$3.00
No. 2, 3-inch.....\$3.00 & \$3.25

Lasts and Stands, Shoe—
Stowell's Atlas, Malleable Iron.....50¢
Stowell's Badger, Cast Iron.....50¢

Latches—Thumb—
Roggin's Latches, with screw.....doz. 35¢ & 40¢

Door—
Allith Mfg. Co., Automatic, No. 400.....doz. \$4.00
Cronk & Carrier Mfg. Co., No. 101,
Cronk & Carrier Mfg. Co., Latch,
Hasp and Staples.....50¢
Richards' Bull Dog, Heary, No. 125.....50¢ & 55¢
Richards' Trump, No. 127.....\$1.50
Stowell's Steel.....50¢

Leaders, Cattle—
Small.....doz. 50¢; large, 60¢
Covert Mfg. Co.:
Cotton, Hemp and Jute, 45%;
Sisal, 33½%

Lifters, Transom—
R. & E.....33½%

Lines—
Wire Clothes, Nos. 13 19 20 175
100 feet.....\$2.25 2.00 1.75
75 feet.....\$1.75 1.55 1.10
Annisson Waterproof Clothes, 50 ft.,
½ gro. \$25.00; Gilt Edge, \$23.00; Air
Line, \$23.00; Acme, \$18.00; Alabama,
\$17.00; Empire, \$16.00; Advance,
\$14.00; Eclipse, \$13.50; Chicago,
\$11.50; Standard, \$10.50; Columbia,
\$9.50; Allerton, \$13.50; Calhoun, \$12.00.
Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3, 40%
Silver Lake Braided Chalk, No. 0,
\$6.00; No. 1, \$6.50; No. 2, \$7.00; No. 3,
\$7.50.
Massey's Lines, Shade Cord, &c.:
White Cotton, No. 3, \$1.50; No. 4,
\$2.00; No. 4½, \$2.50; Colors, No. 5¼,
\$1.75; No. 6, \$2.75; No. 4½, \$2.75;
Linen, No. 3¼, \$2.50; No. 4, \$3.50;
No. 4½, \$4.50.
Tent and Awning Lines: No. 5,
White Cotton, \$7.50; Draw Cotton,
\$8.50.
Clothes Lines, White Cotton: 50 ft.,
\$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75
ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75;
100 ft., \$5.25.

Locks— Cabinet—
Cabinet Locks.....53½¢ & 53½¢ & 47½¢
Door Locks, Latches, &c.—
NOTE—Net Prices are very often made on these goods.

Reading Hardware Co.....40¢
K. & E. Mfg. Co.....40¢

Elevator—
Stowell's.....50%

Padlocks—
Wrought Iron.....75¢ & 10¢ & 80¢ & 5¢
Net prices are general.
R. & E. Mfg. Co. Wrought Steel and
Brass.....75¢ & 10%

Sash, &c.—
Ives' Patent:
Bronze and Brass, 62½%; Crescent,
50¢ & 10¢; Iron, 62½%; Window Ven-
tilating, 60%; Robinson Pat. Ven-
tilating Sash Lock, 40%; Wrought
Bronze and Brass, 55%; Wrought
Steel, 55%.

Pullman Patent Ventilating Lock, 25%
Reading.....40%

Machines—Boring—
Com. Up'r't, without Augers.....\$2.00 & 2.25
Com. Ang'l'r, without Augers.....\$2.25 & 2.50
Swan's Improved.....\$2.50 & 2.50
Angular.....\$2.50 & 2.50

Jennings' Nos. 1 and 4.....35¢ & 5¢
Millers' Falls.....5.75
Snell's, Rice's Pat. 2.50.....2.75

Corking—
Reisinger Invinible Hand Power.....½ doz. \$18.00

Fence—
Williams' Fence Machines.....each, \$5.50

Hoisting—
Moore's Anti-Friction Differential
Pulley Block.....30%
Moore's Hand Hoist, with Lock
Brake.....20%

Ice Cutting—
Chandler's.....12½%

Washing—
Boss Washing Machine Co.: Per doz.
Boss No. 1.....\$37.00
Boss Rotary.....\$34.00
Champion Rotary Banner No. 1.....\$34.00
Standard Champion No. 1.....\$34.00
Standard Perfection.....\$32.00
Cint. Square Western.....\$30.00
Uneda American, Round.....\$30.00

Mallets—
Hickory.....45¢ & 50¢
Lignumvite.....45¢ & 50¢
Tinner's Hickory and Apple-
wood.....doz. 45¢ & 50%

Mangers, Stable—
Swett Iron Works.....50%

Mashers, Vegetable—
Western, W. G. Co., Potato.....60¢ & 10%

Mats, Door—
Elastic Steel (W. G. Co.), new list.....50¢ & 10%

Keystone Wire Matting Co.:
Keystone.....50%
Ideal.....50%

Mattocks—
See Picks and Mattocks.

Milk Cans—See Cans, Milk.

Mills, Coffee, &c.—
Enterprise Mfg. Co.....20¢ & 25¢
National list Jan. 1, 1902.....30¢
Parker's Columbia & Victoria.....50¢ & 60¢
Parker's Box and Side.....50¢ & 60¢
Swift, Lane Bros. Co.....30%

Mowers, Lawn—
NOTE—Net prices are generally quoted
Chapcut.....all sizes, \$1.85 & (2.00)
Cheap.....all sizes, \$2.00 & (2.50)
Better Grade.....all sizes, \$2.50 & (3.50)
12 14 16 18-in.
High Grade.....\$4.50 4.75 5.00 5.25
Continental.....60¢ &

Reading 78.....	doz.	\$6.25
Rocking Table.....	doz.	\$6.25
Turn Table 78.....	doz.	\$6.00
White Mountain.....	doz.	\$5.00

Potato—		
Saratoga.....	doz.	\$7.00
White Mountain.....	doz.	\$6.00

Picks and Mattocks—		
List, Feb. 23, 1899.....	75¢/75¢5%	
Cronk's Handled Garden Mattock.....	doz.	\$6.40

Pinking Irons—		
See Irons, Pinking.....		

Pins, Escutcheon—		
Brass.....	50¢/10¢/60%	
Iron, list Nov. 11, '85.....	60¢/60¢/10%	

Pipe, Cast Iron Soil—		
Carload lots.....		
Standard, 2-6 in. 50¢/10¢/50¢/10¢/45%		
Extra Heavy, 2-6 in.	65¢/10%	
Fittings.....	70¢/10¢/70¢/10¢/45%	

Pipe, Merchant—		
Consumers, Carloads.....		
Steel.....		
Blk. Galv. Blk. Galv.		
1/4 & 1/2 in. 71% 55% 68% 52%		
3/4 in. 75% 59% 79% 56%		
1 in. 75% 63% 78% 56%		
1 1/4 to 6 in. 79% 69% 76% 56%		
7 to 12 in. 74% 59% 71% 56%		

Pipe, Vitrified Sewer—		
Carload lots.....		
Standard Pipe and Fittings, 2 to 24 in.		
New England.....	68%	
New York and New Jersey.....	71%	
Maryland, Delaware, E. Pa.	73%	
West. Pa. and West Va.	75%	
Virginia.....	76%	
Ohio, Michigan and Ky.	75%	
Indiana.....	77%	

NOTE.—Carload lots are generally delivered.

Pipe, Stove—		
Edwards' Nested: C. L. L. C. L.		
5 in., per 100 joints.....	\$5.00	\$8.00
6 in., per 100 joints.....	5.50	8.50
7 in., per 100 joints.....	5.50	9.50

Planes and Plane Irons—		
Wood Planes.....		
Bench, first qual.	35¢/35¢/10%	
Bench, second qual.	45¢/45¢/10%	
Molding.....	30¢/30¢/10%	
Bailey's (Stanley R. & L. Co.).....	40%	
Chapin-Stephens Co.	35¢/35¢/10%	
Bench, First Quality.....	35¢/35¢/10%	
Bench, Second Quality.....	45¢/45¢/10%	
Molding.....	30¢/30¢/10%	
Toy and German.....	35¢/35¢/10%	
Chapin's.....	60%	
Ohio Tool Co.	35%	
Bench, First Quality.....	35%	
Bench, Second Quality.....	45%	
Molding.....	30%	
Adjustable Wood Bottom.....	60%	
Union.....	60%	

Iron Planes—		
Bailey's (Stanley R. & L. Co.).....	40%	
Chapin's Iron Planes.....	50¢/10%	
Miscellaneous Planes (Stanley R. & L. Co.).....	35%	
Ohio Tool Co.'s Iron Planes.....	60%	
Union.....	60%	

Plane Irons—		
Wood Bench Plane Irons.....	25¢/25¢/10%	
Buck Bros.....	30%	
Chapin-Stephens Co.	25¢/25¢/10%	
Ohio Tool Co.	25%	
Stanley R. & L. Co.	25%	
Union.....	25%	
L. & J. J. White.....	20¢/25¢/25%	

Planters, Corn, Hand—		
Kohler's Eclipse.....	doz.	\$8.50

Plates—		
Felice.....	1b. 4¢/4¢	
Self-Sealing Pie Plates (R. M. Co.).....	doz.	\$2.00

Pliers and Nippers—		
Button Pliers.....	75¢/10¢/75, 10, 5%	
Gas Burner, per doz. 5 in.	\$1.25	
@ \$1.30; 6 in., \$1.45 @ \$1.50.		
Gas Pipe.....	7 8 10 12-in.	
Acme Nippers.....	\$2.00 \$2.25 \$2.75 \$3.50	
Cronk & Carrier Mfg. Co.	50¢/45%	
American Button.....	75¢/10%	
Cronk's.....	80%	
Stub's Pattern.....	50%	
Combination and others.....	50%	
Beller's Farriers' Nippers, Pincers and Tools.....	40¢/10¢/40¢/10¢/10%	
The Nettleton Mfg. Co. Reversible Cutting Nippers.....	40%	
F. S. & W. Tinnors' Cutting Nippers.....	10%	
Wm. Schollhorn Co.	50%	
Bernard, 33% ; Elm City, 33% ; Lodi, 50% ; Paragon, 50% ; Swedish Side, End and Diagonal Cutting Pliers.....	50%	
Utica Drop Forge & Tool Co.	40%	
Pliers and Nippers, all kinds.....	40%	

Plumbs and Levels—		
Chapin-Stephens Co.	30¢/30¢/10¢/5%	
Plumbs and Levels.....	30¢/30¢/10¢/5%	
Chapin's Imp. Brass Cor. 40¢/40¢/10%		
Pocket Level.....	30¢/30¢/10¢/5%	
Extension Sights.....	30¢/30¢/10¢/5%	
Machinists' Levels.....	40¢/40¢/10%	
Diston's Plumbs and Levels.....	70%	
Diston's Pocket Levels.....	70%	
C. E. Jennings & Co.'s Iron, Adjustable.....	33% 4%	
C. E. Jennings & Co.'s Iron, Adjustable.....	40¢/74%	
Stanley R. & L. Co.	45%	
Stanley's Duplex.....	45%	
Woods' Extension.....	35%	

Poachers, Egg—		
Buffalo Steam Egg Poachers, No. 3, No. 1, 50¢; No. 2, 40¢; No. 3, 30¢; No. 4, 25¢.		

Points, Glaziers—		
Bulk and 1-lb. papers.....	1b. 10¢	

1/4-lb. papers.....	1b. 9¢/10¢/4¢	
1/2-lb. papers.....	1b. 9¢/10¢/4¢	
Pokes, Animal—		
Ft. Madison Hawkeye.....	doz.	\$3.25
Ft. Madison Western.....	doz.	\$4.00

Police Goods—		
Manufacturers' Lists.....	25¢/25¢/5%	
Tower's.....	25%	

Polish—Metal, Etc—		
Glasbrite, No. 2, 5 lb can (powder), each, \$1.25; doz.	\$12.00	
can (cake), each, \$2.50; doz.	\$24.00	
Prestoline Liquid, No. 1 (1/2 pt.).....	doz.	\$3.00
No. 2 (1-qu.).....	doz.	\$3.72
Prestoline Paste.....	doz.	\$4.00
George William Hoffman.....	doz.	\$4.00
U. S. Metal Polish Paste, 3 oz. boxes, doz. 50¢; doz.	\$4.50	
1/2 lb boxes, doz.	\$1.25	
U. S. Liquid, 3 oz. cans, doz.	\$1.25	
Barkeeper's Friend Metal Polish, doz.	\$1.75	
Wynn's White Silk, 1/2 pt. cans, doz.	\$2.00	

Stove—		
Black Eagle Benzine Paste, 5 lb cans, doz.	\$10.00	
Black Eagle, Liquid, 1/2 pt. cans, doz.	\$7.50	
Black Kid Paste, 5 lb cans, each, 40¢		
Ladd's Black Beauty Liquid, per 100 tins.....	\$2.75	
Joseph Dixon's, 1/2 gr.	\$5.75	
Dixon's Plumbago.....	\$10.00	
Fireside.....	\$2.50	
Gem, 1/2 gr.	\$1.50	
Japanese.....	\$3.50	
Jet Black.....	\$3.50	
Peerless Iron Enamel, 10 oz. cans, doz.	\$1.50	

Wynn's:		
Black Silk, 5 lb pail.....	each	\$7.00
Black Silk, 1/2 lb box.....	doz.	\$0.75
Black Silk, 5 oz. box.....	doz.	\$0.75
Black Silk, 1/2 pt. liq.	doz.	\$0.75

Poppers, Corn—		
1 qt., Square.....	doz.	\$8.00
1 qt., Round.....	doz.	\$9.00
1/2 qt., Square.....	doz.	\$10.00
2 qt., Square.....	doz.	\$12.00

Post Hole and Tree Augers and Diggers—		
See also Diggers, Post Hole, etc.		

Posts, Steel—		
Steel Fence Posts, each, 5 ft., 4¢; 6 ft., 4¢; 6 1/2 ft., 4¢.		
Steel Hitching Posts.....	each	\$1.30

Potato Parers—		
See Parers, Potato.		
Pots, Glue—		
Enamelled.....	40%	
Tinned.....	35%	

Powder—		
In Canisters:		
Duck, 1 lb.....	each	45¢
Fine Sporting, 1 lb.....	each	75¢
Rifle, 1/2 lb.....	each	15¢
Rifle, 1-lb.....	each	25¢
In Kegs:		
12 1/2-lb. kegs.....	\$3.50	
25-lb. kegs.....	\$4.50	

King's Semi-Smokeless:		
Keg (25 lb bulk).....	\$6.50	
Half Keg (12 1/2 lb bulk).....	\$3.50	
Quarter Keg (6 1/4 lb bulk).....	\$1.90	
Case 24 (1 lb cans bulk).....	\$8.50	
Half case (1 lb cans bulk).....	\$4.50	
King's Smokeless: Shot Gun Rifle, Keg (25 lb bulk).....	\$12.00	
Half Keg (12 1/2 lb bulk).....	6.25	
Quarter Keg (6 1/4 lb bulk).....	3.25	
Case 24 (1 lb cans bulk).....	14.00	
Half case (1 lb c. bk.).....	7.00	
Robin Hood Smokeless Shot Gun.....	50¢/20%	

Presses—		
Enterprise Mfg. Co.....	20¢/25%	
Seal Presses—		
Morrill's No. 1, doz.	\$20.00	

Pruning Hooks and Shears		
See Shears.		

Pullers, Cork—		
Invincible Cork Puller.....	\$21.00	

Pullers, Nail—		
Cyclops.....	50%	
Miller's Falls, No. 3, doz.	\$12.00	
Morrill's No. 1, Nail Puller, doz.	\$10.00	
Pearson No. 1, Cyclone Spike Puller, each \$30.00.....	50%	
Scranton, Case Lots:		
No. 2B (large).....	\$5.50	
No. 3B (small).....	\$5.00	
Smith & Hemenway Co.	50%	
Diamond B, case lots, doz. No. 2, 30.00; No. 3, 35.00.		
Giant No. 1, doz.	\$15.00	
Staple Pullers.....	30%	
Parrot Tack and Stub Puller, doz.	75¢; doz.	\$2.00

Pulleys, Single Wheel—		
Inch.....	1 1/4 1 1/2 2 3	
Acating or Tackle.....	doz.	\$0.30 \$1.50 \$1.00
Hay Fork, Sicel or Solid Eye, doz., 4 in., \$1.25; 5 in., \$1.55		
Inch.....	2 3 4 5	
Hot House, doz.	\$0.65 \$1.00 \$1.50	
Inch.....	1 1/4 1 1/2 2 3	
Screw, doz.	\$0.16 \$1.00 \$1.50	
Inch.....	1 1/4 1 1/2 2 3	
Side, doz.	\$0.25 \$1.00 \$1.50	
Inch.....	1 1/4 1 1/2 2 3	
Stowell's:		
Ceiling or End, Anti-Friction.....	60¢/18%	
Dumb Waiter, Anti-Friction.....	60¢/10%	
Electric Light.....	60%	
Side, Anti-Friction.....	60¢/13%	

Sash Pulleys—		
Common Frame; Square or Round End, per doz, 1 1/2 and 2 in.	18¢/13¢	

Auger Mortise, no Face Plate, per doz., 1 1/2 and 2 in.	17¢/19¢	
Acme.....	1 1/2 in., 16¢; 2 in., 19¢	
Fox-All-Steel, Nos. 3 and 1, 2 in.	doz.	50%
Grand Rapids All Steel Noiseless.....	doz.	50%
Ideal.....	70¢/10%	
Niagara.....	1 1/2 in., 16¢; 2 in., 19¢	
No. 25.....	1 1/2 in., 14¢; 2 in., 16¢	
Star.....	1 1/2 in., 16¢; 2 in., 19¢	
Tackle Blocks—See Blocks.		

Pumps—		
Cistern.....	60¢/60¢/10%	
Pitcher Spout.....	80¢/80¢/10%	
Wood Pumps, Tubing, etc.	45¢/50%	
Barnes Dbl. Acting (low list).....	50%	
Barnes' Pitcher Spout.....	75¢/10¢/45%	
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....	\$16.00	
Daisy Spray Pump.....	doz.	\$6.75
Flint & Walling's Fast Mail Hand (low list).....	35%	
Flint & Walling's Fast Mail (low list).....	55¢/5%	
Flint & Walling's Tight Top Pitcher.....	80%	
National Specialty Mfg. Co. Measur. ing.....	\$6.00	
Mechanical Sprayer.....	50%	
Myers' Pumps (low list).....	50%	
Myers' Power Pumps.....	50%	
Myers' Spray Pumps.....	50¢/10%	

Pump Leathers—		
Plunger and Lower Valve—Per gro.		
Inch.....	2 2 1/4 2 1/2 2 3/4	
.....	\$2.20 2.50 2.75 3.00	
Inch.....	3 3 1/4 3 1/2 3 3/4	
.....	\$3.30 3.60 3.85 4.10	
Plunger Cup Leathers—Per 100:		
Inch.....	2 1/2 3 3 1/4 4	
.....	\$2.75 3.85 5.00 6.00	

Punches—		
Saddlers' or Drive, good.....	doz.	50¢/75¢
Spring, single tube, good quality.....	doz.	\$1.75/\$2.00
Revolving (4 tubes).....	doz.	\$3.50/\$3.75
Bemis & Call Co.'s Cast Stl Drive.....	50%	
Bemis & Call Co.'s A.A.A.....	55%	
Morrill's Nos. 1A, 1A, 1B, 1C, 1D.....	50%	
Hercules.....	50%	
Niagara Hollow Punches.....	40%	
Niagara Solid Punches.....	55¢/10%	
Wm. Schollhorn Co.	33% 4%	
Lodi, 50%; Paragon.....	50%	
Steel Screw, B. & K. Mfg. Co.....	50%	
Tinnors' Solid, P. S. & W. Co.	50%	
doz., \$1.44.....	60%	

doz., \$1.41.....	60%
Rail—Barn Door, &c.—	
Sliding Door, Painted Iron.....	2 1/2¢/3¢
Sliding Door, Wrought Brass.....	1 1/4 in., lb., 36¢
Allith Mfg. Co.'s Reliable Hanger	50%
Cruik's:	
Double Braced Steel Rail.....	1/2 ft. 2 1/4 c
O. N. T. Rail.....	2 1/2 c
Griffin's:	
1/2 x 100 ft., 1 x 3-16 in., \$3.00;	
1 1/4 x 3-16 in., 3.50.	
Hinged Hang'r, 100 ft., 1 x 3-16	
in., \$3.10; 1 1/4 x 3-16 in., \$3.60.	
Lane's:	
Hinged Track, 100 ft., 1 in., \$3.40;	
1 1/4 in., \$4.10.	
O. N. T., 100 ft., 1 in., \$2.75; 1 1/4	
in., \$3.50; 1 1/2 in., \$4.00.	
Standard, 100 ft., 1 in., \$4.00	
Lawrence Bros.	100 ft. \$1.00
100 ft., No. 201, \$4.00; No. 202, \$4.00	
New York, 1 x 3-16 in., 100 ft., \$2	

Hindustan No. 1, R'g'lar, 5 lb 5¢
Hindustan No. 1, Small, 5 lb 10¢
Axe Stones (all kinds) 5 to 8 in. 50¢
Queer Creek Stones, 4 to 8 in. 50¢
Queer Creek Slips, 4 to 8 in. 50¢
Sand Stone, 4 to 8 in. 50¢

Scythe Stones—

Chicago Wheel & Mfg. Co.
Gem Corundum, 10 in., \$8.00
gro., 12 in., \$10.80
Norton Emery Scythe Stones:
Less than gross lots, 50¢
One gross or more, 40¢
Lots of 10 gross or more, 30¢
Pike Mfg. Co., 1901 list:
Black Diamond S. 6, 5 lb, \$12.00
Lamouille S. 8, 5 lb, \$11.00
White Mountain S. 8, 5 lb, \$9.00
Green Mountain S. 8, 5 lb, \$8.00
Extra Indian Pond S. 8, 5 lb, \$7.50
No. 1 Indian Pond S. 8, 5 lb, \$7.00
No. 2 Indian Pond S. 8, 5 lb, \$6.50
Leader Red End S. 8, 5 lb, \$6.00
Quick Cut Emery, 5 lb, \$5.00
Pure Corundum, 5 lb, \$4.00
Crescent, 5 lb, \$3.00
Emery Scythe Rifles, 2 Coat, \$8
Emery Scythe Rifles, 3 Coat, \$10
Emery Scythe Rifles, 4 Coat, \$12
Balance of 1901 list 33 1/2%

Stoppers, Bottle—
Victor Bottle Stoppers, 50¢ doz. \$9.50

Stops—Bench—
Morrill's, 50¢ doz. No. 1, \$10.00
Morrill's, No. 2, \$12.50

Door—
Chapin-Stephens Co., 60¢ doz. \$10.00

Plane—
Chapin-Stephens Co., 20%

Straps—Box—
Cary's Universal, case lots, 25¢ doz.

Hame—
Covert's Saddlery Works, 60¢ doz.

Stretchers, Carpet—
Cast Iron, Steel Points, doz. 60¢ doz. \$1.60

Socket—
Bullard, 50¢ doz. \$1.00

Excelsior Stretcher and Tack Hammer Combined, 50¢ doz. \$6.00

Strops, Razor—
Star Diagonal Strop, 25%

Stuffers, Sausage—
Enterprise Mfg. Co., 25¢ doz. \$7.50

National Specialty Co., list Jan. 1, 1902, 30¢ doz. \$9.00

Sweepers, Carpet—
National Sweeper Co., 50¢ doz.

Louis XV, Roller Bearing, Gold Plated, \$12.00

Hepplewhite, Roller Bearing, Silver Plated, \$7.00

Sheraton, Roller Bearing, N'kel, \$6.00

Ye Mission, Roller Bearing, Oxidized Copper, \$3.00

Transparent, Roller Bearing, Plate Glass top, Nickel, \$3.00

National Queen, Roller Bearing, Fancy Veneers, \$2.00

Loyal, Roller Bearing, Veneers, Nickel, \$2.00

Triple Medal, Roller Bearing, Nickel, \$2.00

Marion, Roller Bearing, N'kel, \$2.00

Marion Queen, Roller Bearing, Nickel, \$2.00

Monarch, Roller Bearing, N'kel, \$2.00

Monarch, Roller Bearing, Jap. \$2.00

Perpetual, Regular B'gs, N'kel, \$2.00

Perpetual, Regular B'gs, Jap. \$1.80

Monarch Extra (17 in. case), Roller Bearing, Nickel, \$3.00

Monarch Extra (17 in. case), Roller Bearing, Japanned, \$3.00

Auditorium (28 in. case), Roller Bearing, Nickel, \$4.00

Mammoth (30 in. case), Roller Bearing, Nickel, \$6.00

NOTE—Rebates: 50¢ per dozen on three-dozen lots; \$1 per dozen on five-dozen lots; \$2 per dozen on ten-dozen lots; \$2.50 per dozen on twenty-five-dozen lots.

Sireator Metal Stamping Co., 50¢ doz. \$5.00

Model B, Sanitary, 50¢ doz. \$5.00

Model A, Sterling, 50¢ doz. \$5.00

Model B, Sterling, Nickel, 50¢ doz. \$5.00

Model B, Sterling, Japanned, 50¢ doz. \$5.00

Model C, Sterling, 50¢ doz. \$5.00

Model D, Sterling, 50¢ doz. \$5.00

Tacks, Finishing Nails, &c.

New List, May 1, 1905.

American Carpet Tacks, 90¢ doz. \$9.00

American Cut Tacks, 90¢ doz. \$9.00

Swedes Cut Tacks, 90¢ doz. \$9.00

Swedes Upholsterers', 90¢ doz. \$9.00

Gimp Tacks, 90¢ doz. \$9.00

Lace Tacks, 90¢ doz. \$9.00

Trimmers' Tacks, 90¢ doz. \$9.00

Looking Glass Tacks, 85¢ doz. \$8.50

Bill Posters' and Railroad Tacks, 90¢ doz. \$9.00

Hungarian Nails, 85¢ doz. \$8.50

Finishing Nails, 70¢ doz. \$7.00

Trunk and Clout Nails, 80¢ doz. \$8.00

NOTE—The above prices are for Standard Weights. An extra 5% is given on Medium Weights, and an extra 10% is given on Light weights.

Miscellaneous—
Double Pointed Tacks, 90¢ doz. \$9.00

See also Nails, Wire.

Tanks, Oil—
Emerald, R. M. Co., 30 gal. \$3.40

Emerald, R. M. Co., 60 gal. \$4.25

Queen City, R. M. Co., 30 gal. \$3.65

Queen City, R. M. Co., 60 gal. \$4.50

Tapes, Measuring—
American Asses' Skin, 50¢ doz. \$5.00

Patent Leather, 25¢ doz. \$2.50

Eddy Patent Leather, 25¢ doz. \$2.50

Eddy Steel, 40¢ doz. \$4.00

Keuffel & Esser Co., 40¢ doz. \$4.00

Favorite, Ass Skin, 40¢ doz. \$4.00

Favorite, Duck and Leather, 40¢ doz. \$4.00

Metallic and Steel, lower list, 35¢ doz. \$3.50

Pocket, 35¢ doz. \$3.50

Teeth, Harrow—
Steel Harrow Teeth, plain or headed, 5/8-inch and larger, per 100 lbs. \$2.75 to \$3.00

Thermometers—
Tin Case, 80¢ doz. \$8.00

Ties, Bale—Steel Wire—
Single Loop, 80¢ doz. \$8.00

Monitor, Cross Head, &c., 70¢ doz. \$7.00

Brick Ties—
Niagara Brick Ties, 25¢ doz. \$2.50

Tinners' Shears, &c.—
See Shears, Tinners', &c.

Tinware—
Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—
Covert's Saddlery Works, 60¢ doz. \$6.00

Tire Benders, Upsetters, &c.
See Benders and Upsetters, &c.

Tools—Coopers'—
L. & I. J. White, 20¢ doz. \$2.00

Hay—
Myers' Hay Tools, 50%

Stowell's Hay Carriers, 50%

Forks, 50%

Miniature—
Smith & Hemenway Co.'s, 25%

Saw—
Atkins' Cross Cut Saw Tools, 40%

Simonds' Improved, 30%

Simonds' Crescent, 25%

Ship—
L. & I. J. White, 25%

Transom Lifters—
See Lifters, Transom.

Traps—Fly—
Balloon, Globe or Acme, doz. \$1.15 to \$1.25

Harper, Champion or Paragon, doz. \$1.25 to \$1.40

Game—
Imitation Oneida, 75¢ doz. \$7.50

Newhouse, 40¢ doz. \$4.00

Victor, 70¢ doz. \$7.00

Oneida Community Jump, 50%

Mouse and Rat—
Mouse, Wood, Choker, doz. holes 8 1/2 doz. \$9.00

Mouse, Round or Square Wire, doz. \$5.00 to \$6.00

Marty French Rat and Mouse Traps (Genuine):

No. 1, Rat, each \$1.21; doz. \$13.25

No. 3, Rat, 50¢ doz. \$5.00

No. 3 1/2, Rat, 50¢ doz. \$5.00

No. 4, Mouse, 50¢ doz. \$5.00

No. 5, Mouse, 50¢ doz. \$5.00

Wood's E 1, 50%

Trowels—
Dixton Brick and Pointing, 30%

Dixton Plastering, 25%

Dixton "Standard Brand" and Garden Trowels, 35%

Kohler's Steel Garden Trowels, 50%

5 in., \$4.80; 6 in., \$6.00

Never-Break Steel Garden Trowels, 50%

Rose Brick and Plastering, 25%

Woodrough & McParlin, Plastering, 25%

Trucks, Warehouse, &c.—
B. & L. Block Co., 50% doz.

New York Pattern, 60% doz. \$6.00

Handy Trucks, 50¢ doz. \$5.00

Grocery Trucks, 50¢ doz. \$5.00

Daisy Store Trucks, Improved Pattern, 50¢ doz. \$5.00

McKinney Truck, each \$10.00

Model Store Trucks, 50¢ doz. \$5.00

Tubs, Wash—
No. 1 2 3

Galvanized, per doz. \$4.25 to \$4.75

Galvanized Wash Tubs, R. M. Co., 1 2 3

Per doz., net, \$5.70 to \$6.30

Twine, Miscellaneous—
Plaz Twine, B. C. B.

No. 9, 1/4 and 1/2 lb. Balls, 22¢ doz. \$2.20

No. 12, 1/4 and 1/2 lb. Balls, 18¢ doz. \$1.80

No. 18, 1/4 and 1/2 lb. Balls, 16¢ doz. \$1.60

No. 24, 1/4 and 1/2 lb. Balls, 16¢ doz. \$1.60

No. 36, 1/4 and 1/2 lb. Balls, 15¢ doz. \$1.50

Chalk Line, Cotton, 25¢ doz. \$2.50

Cotton Mops, 6, 9, 12 and 15 lb. to doz., 10¢ doz. \$1.00

Cotton Wrapping, 5 Balls to lb., according to quality, 1 1/2¢ doz. \$1.50

American 2-Ply Hemp, 1/4 and 1/2 lb. Balls, 13¢ doz. \$1.30

American 3-Ply Hemp, 1 lb. Balls, 13¢ doz. \$1.30

India 2-Ply Hemp, 1/4 and 1/2 lb. Balls, 9¢ doz. \$0.90

India 3-Ply Hemp, 1 lb. Balls, 9¢ doz. \$0.90

India 3-Ply Hemp, 1 1/2 lb. Balls, 7 1/2¢ doz. \$0.75

2, 3, 4 and 5-Ply Jute, 1 lb. Balls, 9 1/2¢ doz. \$0.95

Mason Line, Linen, 1/2 lb. Balls, 10¢ doz. \$1.00

No. 264 Mattress, 1/4 and 1/2 lb. Balls, 7¢ doz. \$0.70

Wool, 3 to 6 ply, B 7¢; A 7 1/2¢

Vises—
Solid Box, 60%

Parallel—

Athol Machine Co., 40%

Standard Adjustable, 40%

Amateur, 40%

Columbian Hdw. Co., 40%

Emmert Universal, 40%

Pattern Makers' No. 1, \$15.00; No. 2, \$12.50

Machinist and Tool Makers' No. 4A, \$12.50; No. 5A, \$7.00; No. 6A, \$10.00; No. 10A, \$22.50

Presto Quick Acting, 25¢ doz. \$2.50

Tiger Machinists, 40%

Fisher & Norris Double Screw, 15¢ doz. \$1.50

Machinists', 40%

Keystone, 40%

Lewis Tool Co., 40%

Adjustable Jaw, 30%

Monarch, 50%; Solid Jaw, 50%

Massey Vise Co., 40%

Perfect, 20%; Lightning Grip, 20%

Merrill's, 20%

Millers Falls, 60%

Parker's, 40%

Victor, 20¢ doz. \$2.00

Combination Pipe, 40%

Prentiss, 20%

Snediker's X. L., 33 1/2%

Stephens, 33 1/2%

Williamson Mfg Co. Double Swivel, 40%

Saw Filers—

Dixton's D 3 Clamp and Guide, 40%

doz. \$3.00

Perfection Saw Clamps, 50¢ doz. \$5.00

Reading, 60%

Westworth's Rubber Jaw, Nos. 4 and 3, 45%

Wood Workers—

Massey Vise Co., 15%

Lightning Grip, 15%; Perfect, 15%

Wyman & Gordon's Quick Action, 6 in., \$6.00; 9 in., \$7.00; 14 in., \$8.00

Bignall & Keeler Combination Pipe Vise, 60%

Holland's Combination Pipe, 60%

Massey's Quick Action Pipe, 40%

Parker's Combination Pipe, 40%

87 Series, 60%; 187 Series, 60%; No. 870, 40%

Williamson Mfg Co. Double Swivel Combination Pipe, 40%

Wads—Price per M.

B. E., 11 up, 60¢

B. E., 9 and 10, 70¢

B. E., 8, 80¢

B. E., 7, 80¢

P. E., 11 up, \$1.00

P. E., 9 and 10, 1.25

P. E., 8, 1.50

P. E., 7, 1.50

Ely's B. E., 11 and larger, \$1.70 to \$1.75

Ely's P. E., 12 to 20, \$3.00 to \$3.25

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow Ware:

Enameled, 55%

Ground, 60%

Plain or Unground, 65%

Country Hollow Ware, per 100 lbs., \$8.75

White Enameled Ware:

Mainline Kettles, 70%

Covered Wares